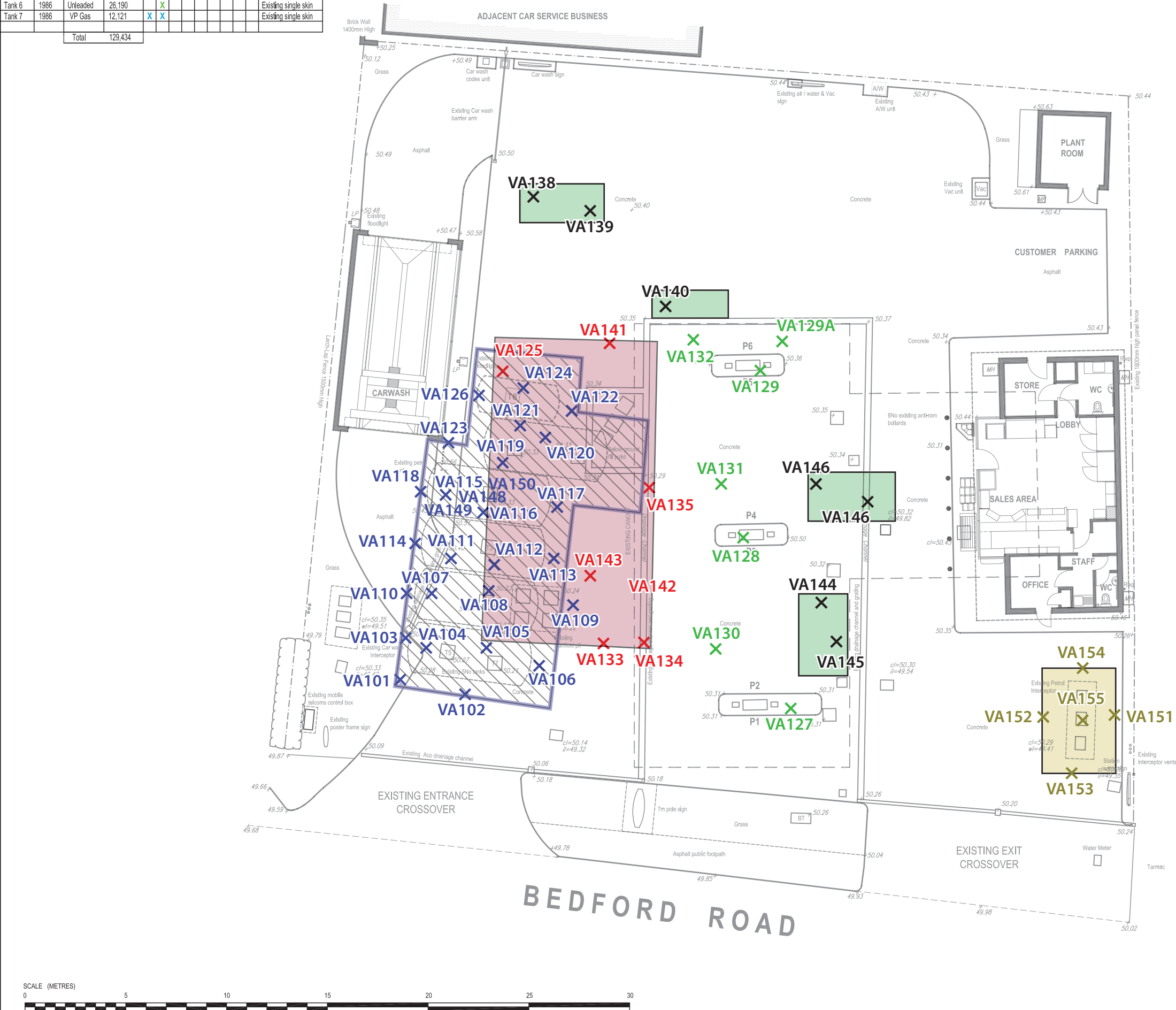


DO NOT SCALE

EXISTING TANK TO PUMP SCHEDULE											
No	Age	Grade	SWC capacity	12	34	56					Comments
Tank 1	1986	VP Gas	13,190			X					Existing single skin
Tank 2	1986	VP Diesel	13,190		X						Existing single skin
Tank 3	1986	Unleaded	26,190	X							Existing single skin
Tank 4	1986	Diesel	26,190	X	X						Existing single skin
Tank 5	1986	Unleaded	12,363			X					Existing single skin
Tank 6	1986	Unleaded	26,190		X						Existing single skin
Tank 7	1986	VP Gas	12,121	X	X						Existing single skin
Total			129,434								



NOTES

NOTE:
THE INFORMATION BELOW IS FROM OUTSIDE SOURCES
(ARTELIA, DRAWING No.1350-03) URS HAS NOT CHECKED IF THIS
INFORMATION IS CORRECT.

KEY

- EXA: EXISTING TANK FARM
- VA101: SAMPLE FROM EXA
- EXB: NEW TANK FARM
- VA141: SAMPLE FROM EXB
- TRAIL PIT
- VA132: TRAIL PIT SAMPLE
- VA128: PUMP ISLAND FULL LINE SAMPLE (EXC)
- EXD: INTERCEPTOR EXCAVATION
- VA151: SAMPLE FROM EXD

DESCRIPTION	DATE	APPROVED	DATE
-------------	------	----------	------

STATUS

CONSULTING ENGINEERS

URS

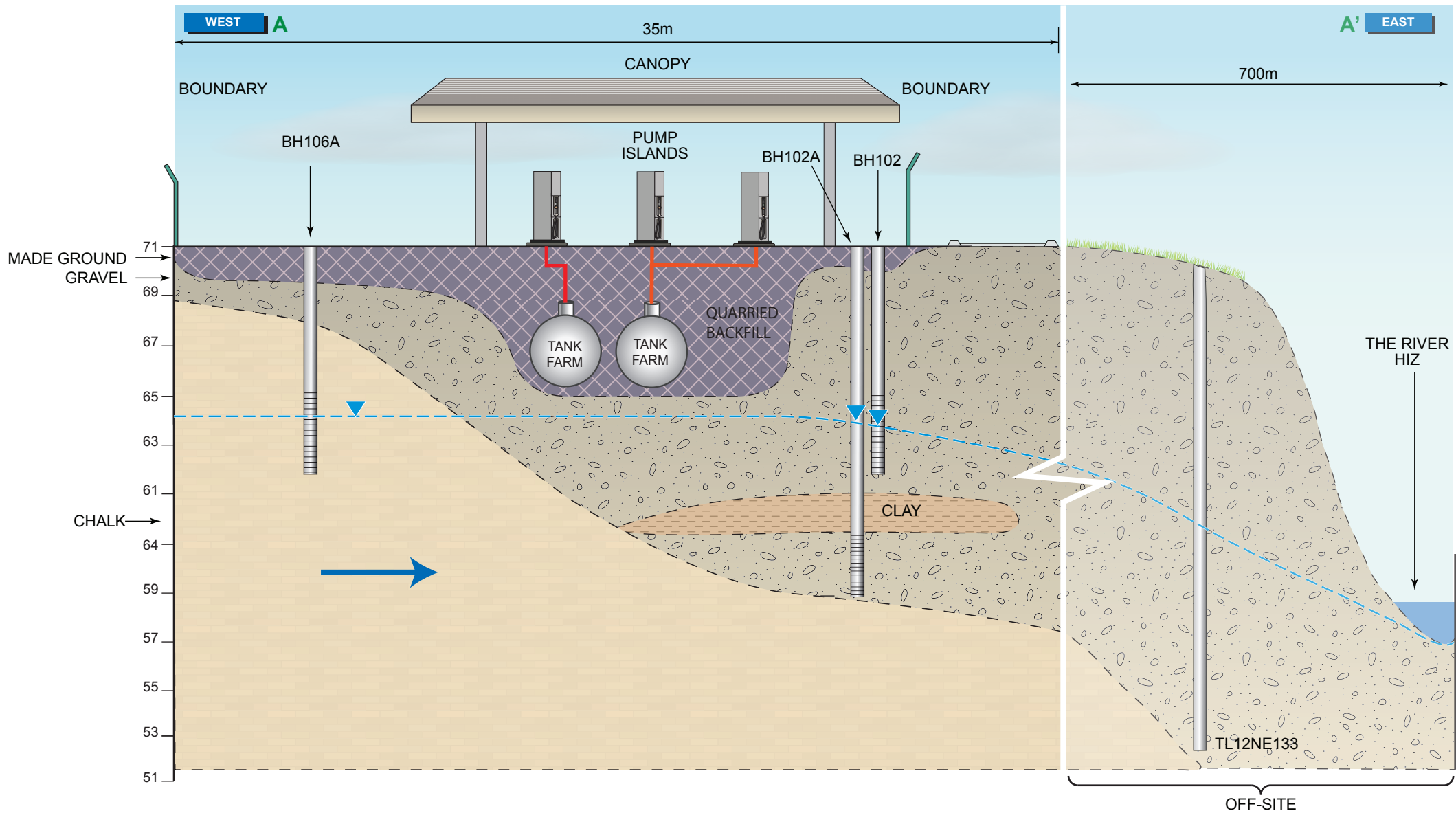
URS Infrastructure & Environment UK LTD
St George's House, 2nd Floor
5 St George's Road, Wimbledon, London SW19 4DR
Tel :020 8944 3300 Fax: 020 8944 3301

CLIENT
SHELL UK OIL PRODUCTS LIMITED

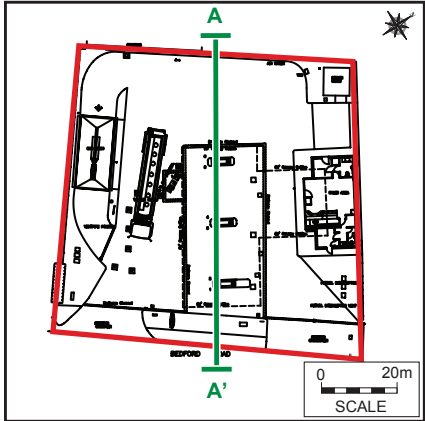
PROJECT
SHELL HITCHEN
BEDFORD ROAD, HITCHEN
BEDFORDSHIRE, SG5 2TY

DRAWING TITLE
VALIDATION SAMPLING LOCATIONS
FIGURE 3

DRAWN LCS	DESIGNED JW	CHECKED JW	APPROVED JW	DATE OCT 2013
SCALE AS SHOWN	DRG No 46370079/FIGURE 3	REV.		



NOTES



AREA OF POTENTIAL CONCERN

- On-site**
- Historical**
- Historical use of the site as a petrol filling station since 1970.
 - Leaking and joints were noted during an inspection of the pumps and pipework by the Petroleum Officer in October 1986.
 - A leak on pump 8/9 noted by the Petroleum Officer in January 1991.
- Current**
- Operational underground storage tanks (URSSW understands there are no historic / decommissioned storage tanks on-site).
 - Accidental releases to ground from off-set fill points, located to the south of the forecourt.
 - Accidental releases to ground from dispenser pumps: 3 car fuel islands under the canopy and cracks in concrete surface of the forecourt.
 - Accidental releases from fuel lines: Present between the tanks, offset fill points and fuel islands.
 - Site interceptors (main forecourt interceptor located at the north east of the site, and interceptor associated with the car wash at the south of the site) and associated drainage lines.
 - Drainage from the car wash.
- Off-site**
- Historical**
- An Aboveground Storage Tank (AST) associated with a warehouse is shown approximately 30m north of the site boundary.
 - Garage (later shown as depot) approximately 5m north of the site boundary.
- Current**
- Garage adjacent to the site boundary at the west of the site.
 - Tyre Centre/Garage approximately 5m north of the site boundary.

CHEMICALS OF POTENTIAL CONCERN

- Historical**
- Metals – arsenic, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium and zinc.
 - VOCs
- Current**
- TPH - Petroleum hydrocarbons.
 - BTEX- Benzene, toluene, ethylbenzene and xylenes.
 - Petroleum Additives- Methyl tertiary butyl ether (MTBE) and tertiary amyl methyl ether (TAME).
 - PAHs- Polycyclic aromatic hydrocarbons.
 - Metals – arsenic, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium and zinc.

POTENTIAL PATHWAYS

- Human Health**
- Vapours – Migration of vapours through made ground to above ground buildings.
 - Particulate – Ingestion, inhalation, dermal contact, with soil particulates.
 - Permeation – Migration of hydrocarbon substances through plastic potable water supply pipes.
- Controlled Waters**
- Leaching – Migration of hydrocarbon substances from soils into shallow (and potentially deep) aquifers.
 - Migration of impacted perched water into shallow (and potentially deep) aquifers

POTENTIAL RECEPTORS

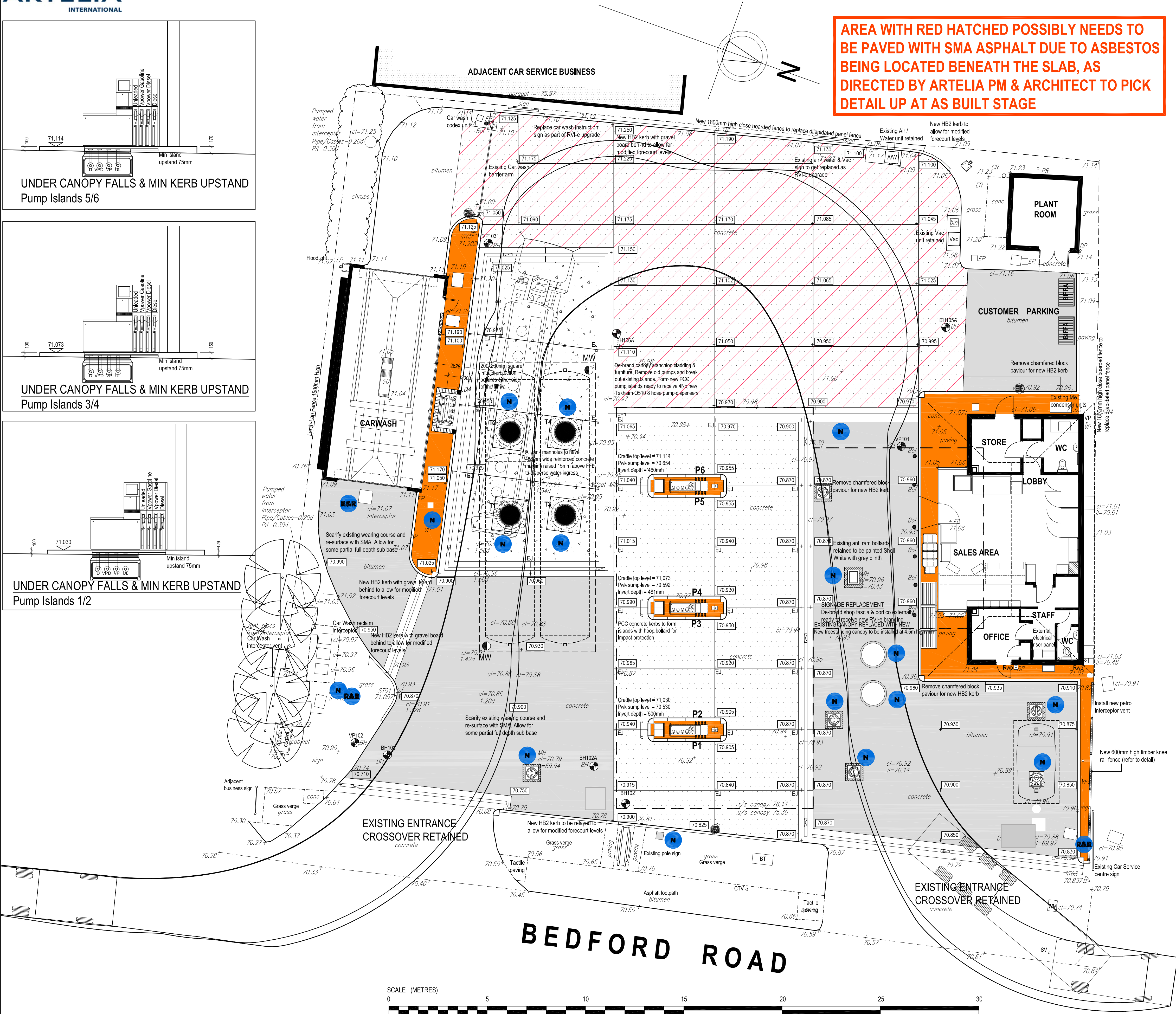
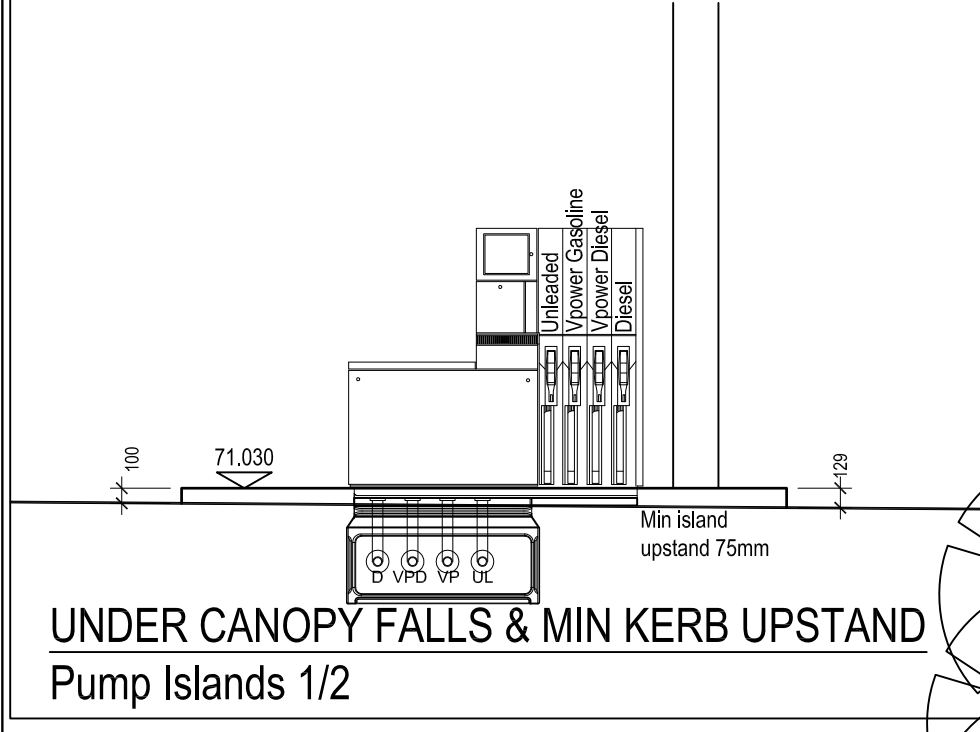
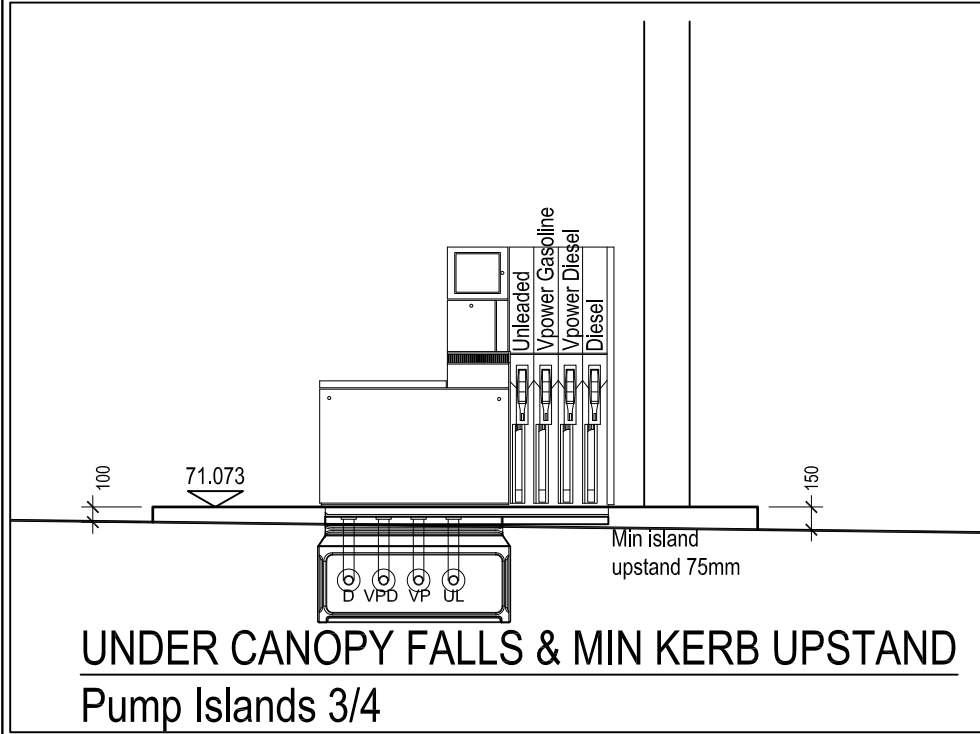
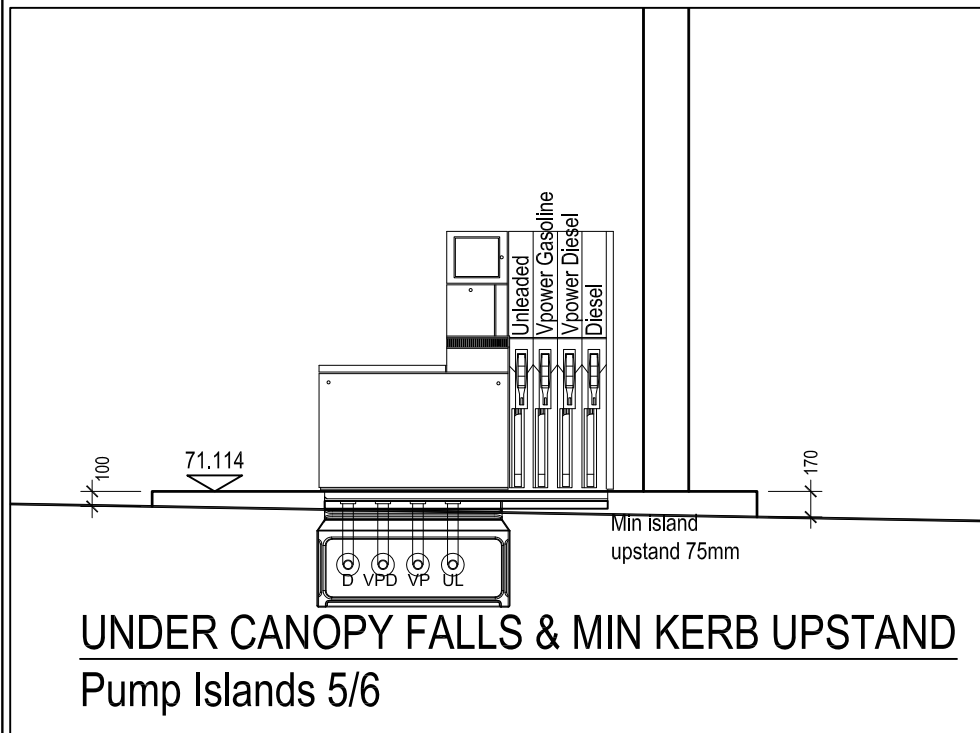
- Human Health**
- Shop staff.
 - The general public and visiting staff (such as contractors, including those conducting excavation works).
 - Workers in the garage adjacent to the east of the site, tyre centre approximately 5m north of the site and workers and guests at the Fir Hotel approximately 5m south of the site.
 - Occupants of residential properties approximately 30m north and south of the site and 20m to the west of the site
- Controlled Waters**
- Groundwater within the Superficial Deposits on-site (Potentially a Secondary A Aquifer).
 - Groundwater within the Zig Zag Chalk Formation (Principal Aquifer).
- Human Health**
- Potentially impacted shallow soils / groundwater, followed by vapour migration to on-site workers within the shop area and off-site workers to the north and east of the site.
 - Potentially impacted shallow soils / groundwater, followed by permeation through plastic pipes into the site potable water supply.
- Controlled Waters**
- Potentially impacted shallow soils / groundwater, followed by vertical migration into the shallow groundwater within the shallow Drift Deposits that border the site, and potentially deeper groundwater in the underlying Zig Zag Chalk Formation Principal Aquifer
 - Potentially impacted shallow soils / groundwater: migration of chemicals of potential concern (COPC) from soils into shallow groundwater.

POTENTIALLY COMPLETE POLLUTANT LINKAGES:

- None identified.

NO.	DESCRIPTION	DRAWN	DESIGNED	CHECKED	APPROVED	DATE
STATUS		FINAL				
CONSULTING ENGINEERS						
URS						
URS Infrastructure & Environment UK LTD, St George's House, 2nd Floor 5 St George's Road, Wimbledon, London SW19 4DR Tel :020 8944 3300 Fax: 020 8944 3301						
CLIENT SHELL UK OIL PRODUCTS LIMITED						
PROJECT SHELL, BEDFORD ROAD, HITCHEN, HERFORDSHIRE, SG5 2TY						
DRAWING TITLE Conceptual Site Model – Figure 4						
DRAWN LCH	DESIGNED JT	CHECKED JT	APPROVED JT	DATE MARCH 2012		
SCALE NTS	DRG No. 46370079/FIGURE 4		REV.			

Figure 5 – As-Built drawing (10019011-FIN – 2013 - D) detailing site features post redevelopment



AREA WITH RED HATCHED POSSIBLY NEEDS TO BE PAVED WITH SMA ASPHALT DUE TO ASBESTOS BEING LOCATED BENEATH THE SLAB, AS DIRECTED BY ARTELIA PM & ARCHITECT TO PICK DETAIL UP AT AS BUILT STAGE

FINISHES NOTES

- All inspection covers to have 250mm reinforced concrete margin.
- All drainage channels to have 300mm reinforced concrete margin with reinforcement to Structural Engineers details.
- New inspection covers must be level with new surface.
- All tank lids to be 15mm above adjacent surface and to have min 450mm concrete reinforced margins to Structural Engineers details.
- All trafficked finishes to be laid to Structural Engineers details.
- All non-trafficked finishes to be laid to standard details.
- Thermoplastic road markings to be applied as indicated.
- On completion of the works site to receive full valet & re-paint.
- Margin around dispenser base to have 1% incline to drain storm run off and potential spills.

LEVELS LEGEND

- x 146.84 Denotes existing Survey level
- + 146.860 Denotes proposed Finish level

SURFACES LEGEND

- Denotes area to be paved in 200 - 225mm THICK REINFORCED CONCRETE BAYS TO SHELL / ARTELIA DESIGN STANDARDS OR STRUCTURAL ENGINEERS DETAILS. TO FORM LEAK TIGHT FORECOURT FOR HEAVY TRAFFIC. ALL JOINTS TO RECEIVE PETROLEUM RESISTANT SEALANT
- Denotes area to be paved in 150 - 175mm THICK REINFORCED CONCRETE BAYS TO SHELL / ARTELIA DESIGN STANDARDS OR STRUCTURAL ENGINEERS DETAILS. TO FORM LEAK TIGHT FORECOURT FOR MEDIUM TRAFFIC. ALL JOINTS TO RECEIVE PETROLEUM RESISTANT SEALANT
- Denotes area to be paved in 40mm SMA with 10-14mm SIZED AGGREGATE. ON BASE COURSE, ROAD BASE AND SUB BASE TO SHELL / ARTELIA DESIGN STANDARDS OR STRUCTURAL ENGINEERS DETAILS. (Scarify and relay top course where indicated)
- Denotes area to be paved in 100mm THICK CONCRETE TO SHELL / ARTELIA DESIGN STANDARDS OR STRUCTURAL ENGINEERS DETAILS. TO FORM SECURE FOOTPATH FOR LIGHT / PEDESTRIAN FOOT TRAFFIC.
- Denotes area to be soft landscaped
- EJ Denotes EXPANSION JOINTS BETWEEN CONCRETE BAYS
- Denotes MANHOLE FRAME MARGIN 150mm WIDE TO SERVICES MANHOLES
- Existing manhole to be broken out, raised and re-bedded with new concrete margin
- New heavy duty manhole, cover and frame to be installed with heavy duty concrete margin

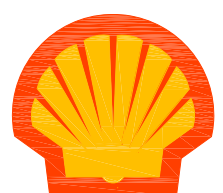
NB: ALL NOTES TO BE READ AS 'PAST TENSE' AND ARE RETAINED HERE TO INDICATE THE AS CONSTRUCTED EXTENT OF WORKS

project managers & architects

D	08-08-13	Issued as Record Drawing	SMR
C	03-06-13	Ductwork & drainage amendments	SGL
B	13-02-13	Construction Issue	SGL
A	05-02-13	Drawing first issued	SGL
#	21-01-13	Drawing first issued	SGL
REV	DATE		BY

PROJECT : SHELL HITCHIN
BEDFORD ROAD, HITCHIN
HERTFORDSHIRE, SG5 2TY

TITLE : FINISHES DRAWING



SHELL UK RETAIL
PO BOX 430
STAINES
TW18 3ZB
UNITED KINGDOM

DRAWN BY :	SMR	SCALE :	1:100
DATE :	21.01.13	PLOT DATE :	08.08.13
CAD FILE :	E:\ARCHIVE\DRAWINGS\HITCHIN\10019011-FIN_2013		

DWG No :	10019011	FIN	2013	D
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Tables

Table 1 – Soil Analytical Results with Stage 2 GAC – CPU Land use

Table 2 – Soil Analytical Results with Stage 2 GAC – Residential Land use

Table 3 – Groundwater Results with Controlled Waters SSAC

Table 4 – Groundwater Elevations and Quality Measurements

TABLE 1
SOIL ANALYTICAL DATA WITH CPU GAC AND STAGE 3 CONTROLLED WATERS SSAC

Human Health Criteria	Stage 2 CPU GAC
Controlled Waters Criteria	Stage 3 SSAC
Sample Round	(All)
Site	Hitchin

					BACKFILL1 W	BACKFILL2 W	BACKFILL3 W	FILL 0	MW102 7	VA101 4.5	VA102 3	VA103 3	VA104 6.5	VA105 6.5	VA106 6.3	VA107 6.8	VA108 6.7	VA109 6.8	VA110 7	VA111 7	VA112 7	VA113 6.7	VA114 6.5	VA115 6.5	VA116 6.5	VA117 6.5	VA118 6.5	VA119 6.5	
BTEX	Chem Class	Analyte	HH	CW	Units	12/04/2013	12/04/2013	12/04/2013	20/05/2013	12/08/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	11/04/2013	
		BENZENE	>2.3	0.121	mg/kg	ND	ND	ND	0.00813	ND	ND	ND	ND	0.84	ND	0.185	0.0076	0.00892	ND	0.0113	0.0448	ND	ND	ND	120	3.44	0.284	0.00699	0.0111
		TOLUENE	>Sat	77.3	mg/kg	ND	ND	ND	0.00618	ND	ND	ND	ND	ND	5.3	ND	3.03	0.0109	0.0108	0.0261	0.0188	0.591	0.00771	0.00868	237	10.5	0.854	0.00788	0.0802
		ETHYLBENZENE	>Sat	76.2	mg/kg	ND	ND	ND	0.012	ND	0.00868	ND	0.00686	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		M P XYLENE	613	133	mg/kg	ND	ND	ND	0.039	ND	ND	ND	ND	ND	34.4	ND	107	0.02	0.0203	0.0279	0.0257	3.89	ND	ND	1070	46.9	2.31	ND	0.432
	O XYLENE	>Sat	133	mg/kg	ND	ND	ND	0.0153	ND	ND	ND	ND	ND	17.3	ND	48	ND	ND	0.0337	0.0159	2.16	ND	ND	411	19.3	0.973	ND	0.262	
PAH		ACENAPHTHENE	>Sat	>Sat	mg/kg	ND	0.00885	ND	ND	ND	ND	ND	ND	0.0537	ND	0.0403	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.272	ND	ND	ND
		ACENAPHTHYLENE	>Sat	16.6	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0766	ND	ND	ND
		ANTHRACENE	>Sat	>Sat	mg/kg	0.0236	ND	ND	0.0177	ND	ND	ND	ND	0.102	ND	0.0754	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.586	ND	ND	ND
		BENZO A ANTHRACENE	>Sat	>Sat	mg/kg	0.0696	0.0354	0.0496	0.0497	ND	ND	ND	ND	0.0391	ND	0.0235	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.168	ND	ND	ND
		BENZO A PYRENE	>Sat	>Sat	mg/kg	0.058	0.0315	0.0395	0.0705	ND	ND	ND	ND	0.0214	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.113	ND	ND	ND
		BENZO B FLUORANTHENE	>Sat	>Sat	mg/kg	0.0665	0.0391	0.0545	0.0667	ND	ND	ND	ND	0.0227	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.125	ND	ND	ND
		BENZO G H I PERYLENE	>Sat	>Sat	mg/kg	0.0418	0.0285	0.0308	0.0457	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.168	ND	ND	ND
		BENZO K FLUORANTHENE	>Sat	>Sat	mg/kg	0.0289	0.018	0.0207	0.0292	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0418	ND	ND	ND
		CHRYSENE	>Sat	>Sat	mg/kg	0.0519	0.0433	0.0472	0.0387	ND	ND	ND	ND	0.0308	ND	ND	0.0216	ND	ND	ND	ND	ND	ND	ND	ND	0.138	ND	ND	ND
		DIBENZ A H ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		FLUORANTHENE	>Sat	7.99	mg/kg	0.126	0.0864	0.106	0.102	ND	ND	ND	ND	0.0775	ND	0.0548	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.45	ND	ND	ND
		FLUORENE	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	0.182	ND	0.127	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.985	0.0127	ND	0.0206
		INDENO 1 2 3 CD PYRENE	>Sat	>Sat	mg/kg	0.0318	0.0192	0.0228	0.0358	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0158	0.0137	ND	ND	ND	0.0397	ND	ND	ND
		NAPHTHALENE	19.9	0.28	mg/kg	ND	ND	ND	0.0102	ND	ND	ND	0.0137	ND	1.19	0.035	3.88	0.0208	0.0427	ND	0.038	0.0215	0.0205	ND	39.9	0.193	0.0371	0.0908	
		PERENANTHRENE	>Sat	>Sat	mg/kg	0.0664	0.0654	0.0549	0.0582	ND	ND	ND	ND	0.347	ND	0.262	ND	ND	ND	0.0382	0.0432	ND	ND	2.02	0.0456	ND	ND	0.049	
		PYRENE	>Sat	>Sat	mg/kg	0.109	0.0746	0.093	0.105	ND	ND	ND	ND	0.141	ND	0.104	ND	ND	ND	0.0223	0.0206	ND	ND	0.923	ND	ND	ND	ND	
		TOTAL PAH	(blank)	(blank)	mg/kg	0.674	0.45	0.518	0.629	ND	ND	ND	ND	2.24	ND	4.59	ND	ND	ND	ND	ND	ND	ND	46	0.252	ND	ND	0.16	
RISKTPH		RISK TPH C5 C7 AROM	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0162	ND	3.73	0.348	0.236	ND
		RISK TPH C7 C8 AROM	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	70.9	3.31	0.166	ND	
		RISK TPH C8 C10 AROM	387	>Sat	mg/kg	ND	ND	ND	0.0532	ND	ND	ND	ND	268	0.15	16	0.164	0.168	0.0597	0.287	27.3	0.113	0.0293	ND	112	6.27	0.0221	15	
		RISK TPH C10 C12 AROM	>Sat	>Sat	mg/kg	ND	ND	ND	0.0276	ND	ND	ND	ND	84.5	0.418	6.35	0.121	0.144	ND	0.617	9.78	0.113	ND	ND	198	19.1	1.52	0.0117	11.3
		RISK TPH C12 C16 AROM	>Sat	>Sat	mg/kg	ND	ND	ND	4.57	ND	ND	ND	6.93	9.24	ND	4.72	ND	ND	ND	ND	ND	ND	ND	ND	55.3	3.48	1.94	3.24	2.82
		RISK TPH C16 C21 AROM	>Sat	>Sat	mg/kg	0.83	0.902	ND	4.1	ND	ND	ND	6.51	ND	20.2	ND	12.5	ND	ND	6.27	ND	ND	ND	ND	102	6.33	2.97	2.98	4.81
		RISK TPH C21 C35 AROM	>Sat	>Sat	mg/kg	ND	ND	ND	11.4	0.301	ND	ND	ND	69.5	ND	43.6	ND	ND	ND	12.4	ND	ND	ND	ND	290	16.2	8.01	7.63	8.58
		RISK TPH C5 C6 ALI	369	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	0.162	0.0192	0.484	0.0109	0.014	ND	0.0121	0.106	0.0134	ND	ND	16.8	2.42	0.616	ND	0.247
		RISK TPH C6 C8 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	0.0191	ND	39.1	ND	ND	39.1	0.151	8.47	0.035	0.048	ND	0.0666	8.33	0.0459	ND	ND	1010	51.7	1.14	ND	6.6
		RISK TPH C8 C10 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	0.0361	ND	ND	ND	ND	187	0.226	13.4	0.106	0.151	ND	0.25	22.9	0.103	0.0105	ND	953	77.6	3.32	0.0143	16.3
		RISK TPH C10 C12 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	0.0415	ND	ND	ND	ND	127	0.627	9.52	0.182	0.216	ND	0.926	14.7	0.169	0.0105	ND	297	26.7	2.28	0.0169	16.9
		RISK TPH C12 C16 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	6.76	0.212	5.84	ND	8.48	ND	29.7	ND	7.17	ND	ND	4.57	3.57	ND	ND	ND	54.4	4.5	2.69	5.69	3.85
		RISK TPH C16 C21 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	3.28	0.347	7.19	ND	7.55	ND	40.9	ND	19	ND	ND	ND	11.4	4.38	ND	ND	211	6.39	1.24	1.65	3.63
		RISK TPH C21 C35 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	9.98	0.275	22.6	ND	22.6	ND	175	ND	120	ND	ND	ND	22.8	24.2	ND	ND	1410	29.1	2.71	4.1	ND
		RISK TPH C35 C44 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	ND	0.351	ND	ND	ND	33.3	ND	22.1	ND	ND	ND	ND	3.12	ND	ND	ND	352	ND	ND	ND	ND
		TPH STAGE2 HI	1	(blank)	ratio	0.0001402	0.0001402	0.0001395	0.002679964	0.0001521	0.000775549	0.000139548	0.001355903	0.000139548	0.002396483	0.122074246	0.001205038	0.00147961	0.000268072	0.0036846	0.2005554	0.0010619	0.0001921	0.0001921	0.7343498	0.0370247	0.0009458	0.1406109	ND
VOC		DIPE	42.9	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		ETBE	20.8	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		ETBE	65.1	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.00131	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00279	ND	ND	ND
		ETHANOL	(blank)	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		TBA	3330	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.108	ND
	MTBE	685	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.383	ND	ND

XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria
XX	Sample removed from site

CSM / Assumptions:

Soil 1% SOM (0.58% TOC)

Soil properties for "sand"

Commercial site area 0.5ha

Soil gas ingress rates calculated by model

Infinite groundwater source at 1m bgl for groundwater GAC

High density residential assume vapour exposure pathways only

CFU scenario modified from modelled commercial scenario by

Building dimensions (l x w x h): 14m x 6.5m x 2.4m

Differential pressure: 2.6 pascals

Only vapour exposure pathways considered viable

Derived November 2010 using Human7.1 Issue9. MTF.

ND: Not detected above MDL

HH: Human Health

GAC: Generic Assessment Criteria

(blank): No criteria

NP: No pathway

>Sat: Unacceptable risk not achieved due to calculated saturation of vapour pathway

NT: Not tested

TABLE 1
SOIL ANALYTICAL DATA WITH CPU GAC AND STAGE 3 CONTROLLED WATERS SSAC

Human Health Criteria	Stage 2 CPU GAC
Controlled Waters Criteria	Stage 3 SSAC
Sample Round	(All)
Site	Hitchin

Chem Class	Analyte		HH	CW	Units	VA120	VA121	VA122	VA123	VA124	VA125	VA126	VA127	VA128	VA129	VA130	VA131	VA132	VA133	VA134	VA135	VA136	VA137	VA138	VA139	VA140	VA141	VA142	VA143	VA144	VA145	
						8.5	3.5	9	2.5	6.7	9	3	0.6	1.5	2	1.2	1.2	1.2	6	6	6	6	3	5.5	9	6.5	9	6.5	3	6.5	3	6.5
BTX	BENZENE		>Sat	0.121	mg/kg	0.0161	0.0514	11/04/2013	11/04/2013	11/04/2013	11/04/2013	11/04/2013	11/04/2013	12/04/2013	12/04/2013	15/04/2013	15/04/2013	15/04/2013	15/04/2013	15/04/2013	15/04/2013	15/04/2013	15/04/2013	17/04/2013	17/04/2013	17/04/2013	17/04/2013	17/04/2013	17/04/2013	17/04/2013	17/04/2013	17/04/2013
	TOLUENE		>Sat	77.3	mg/kg	0.135	0.0664	0.00716	0.00993	ND	0.00731	0.00751	0.00881	0.0132	0.00952	ND	ND	0.00997	ND	ND	0.00834	0.00757	ND	0.0072	ND	0.00969	0.00919	0.0365	ND	ND	ND	
	ETHYLBENZENE		>Sat	76.2	mg/kg	0.0294	0.0857	0.00928	0.0107	0.00872	0.008	0.0101	0.00683	0.00955	0.0113	ND	0.00455	0.00565	0.0078	0.0196	0.00968	0.00769	0.0344	0.00986	ND	0.0109	0.0139	0.364	0.00823	ND	0.00828	
	M P XYLENE		613	133	mg/kg	0.067	0.0786	ND	ND	ND	ND	ND	ND	0.0166	ND	ND	ND	ND	0.0384	ND	0.0533	ND	ND	0.0778	ND	ND	ND	1.82	ND	ND	ND	
	O XYLENE		>Sat	133	mg/kg	0.0225	0.0315	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0488	ND	0.0263	ND	ND	0.0257	ND	ND	ND	2.293	ND	ND	ND	
PAH	ACENAPHTHENE		>Sat	>Sat	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.12	ND	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0142	ND	ND	
	ACENAPHTHYLENE		>Sat	16.6	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.0206	ND	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ANTHRACENE		>Sat	>Sat	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.215	ND	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0443	ND	ND	
	BENZO A ANTHRACENE		>Sat	>Sat	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.862	0.0317	ND	NT	0.0165	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0714	ND	ND	
	BENZO A PYRENE		>Sat	>Sat	mg/kg	NT	0.0338	ND	ND	ND	ND	ND	1.15	0.0351	ND	NT	0.0176	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0692	ND	ND	
	BENZO B FLUORANTHENE		>Sat	>Sat	mg/kg	NT	0.0393	ND	ND	ND	ND	ND	1.14	0.0316	ND	NT	0.0176	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.072	ND	ND	
	BENZO G H I PERYLENE		>Sat	>Sat	mg/kg	NT	0.0529	ND	ND	ND	ND	ND	0.757	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.051	ND	ND	
	BENZO K FLUORANTHENE		>Sat	>Sat	mg/kg	NT	0.019	ND	ND	ND	ND	ND	0.541	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0349	ND	ND	
	CHRYSENE		>Sat	>Sat	mg/kg	NT	0.0162	ND	ND	ND	ND	ND	0.761	0.0225	ND	NT	0.0128	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0577	ND	ND	
	DIBENZ A H ANTHRACENE		>Sat	>Sat	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.167	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0341	ND	ND
	FLUORANTHENE		>Sat	7.99	mg/kg	NT	ND	ND	ND	ND	ND	ND	1.16	0.0467	ND	NT	0.026	NT	0.0201	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.118	ND	ND	
	FLUORENE		>Sat	>Sat	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.101	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0387	ND	ND	
	INDENO 1 2 3 CD PYRENE		>Sat	>Sat	mg/kg	NT	0.0366	ND	ND	ND	ND	ND	0.638	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0341	ND	ND
	NAPHTHALENE		>Sat	19.9	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.0287	ND	NT	ND	NT	ND	ND	0.118	ND	ND	0.0645	ND	ND	ND	ND	0.0581	0.0289	ND	ND	
	PHENANTHRENE		>Sat	>Sat	mg/kg	NT	ND	ND	ND	ND	ND	ND	0.671	0.0277	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0834	ND	ND	
	PYRENE		>Sat	>Sat	mg/kg	NT	ND	ND	ND	ND	ND	ND	1.11	0.0428	ND	NT	0.0228	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.164	ND	ND	
TOTAL PAH		(blank)	(blank)	mg/kg	NT	0.198	ND	ND	ND	ND	ND	9.45	0.238	ND	NT	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.91	ND	ND		
RISKTPH	RISK TPH C6 C7 AROM		>Sat	>Sat	mg/kg	0.0701	0.0315	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C7 C8 AROM		>Sat	>Sat	mg/kg	5.67	0.189	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C8 C10 AROM		>Sat	387	mg/kg	1.41	0.721	0.0244	ND	0.0108	ND	ND	ND	0.125	0.0216	ND	ND	1.21	ND	0.592	0.01	ND	1.94	0.0152	ND	ND	ND	12.3	0.13	ND	ND	
	RISK TPH C10 C12 AROM		>Sat	>Sat	mg/kg	1.01	0.513	0.065	ND	ND	ND	ND	0.149	0.03	ND	ND	1.87	ND	0.439	ND	ND	ND	ND	ND	ND	ND	ND	30.4	0.334	ND	ND	
	RISK TPH C12 C16 AROM		>Sat	>Sat	mg/kg	3.83	3.9	2.14	3.13	ND	ND	ND	1.7	14.2	ND	ND	4.86	5.41	4.95	5.54	9.2	16.7	8.57	16	8.09	3.92	5.24	15.9	9.15	2.4	1.91	
	RISK TPH C18 C21 AROM		>Sat	>Sat	mg/kg	3.85	5.86	1.71	1.49	ND	ND	ND	2.8	70	ND	ND	5.74	7.27	27.4	5.09	4.69	5.14	4.12	4.61	4.42	2.64	5.2	30	7.79	2.42	2.22	
	RISK TPH C21 C35 AROM		>Sat	>Sat	mg/kg	9.55	27.3	11.6	11	ND	ND	ND	9.03	67.8	ND	ND	12.3	17	59.5	14.6	ND	ND	8.23	8.49	5.78	4.48	71.9	10.4	5.6	3.86	3.23	
	RISK TPH C5 C6 ALI		>Sat	>Sat	mg/kg	0.221	0.572	ND	ND	ND	ND	ND	ND	0.0132	ND	ND	0.052	ND	0.0512	ND	ND	0.222	ND	ND	ND	ND	ND	0.0615	0.0136	ND	ND	
	RISK TPH C6 C8 ALI		>Sat	>Sat	mg/kg	5.96	2.08	0.0104	ND	ND	ND	ND	ND	0.0506	0.0336	ND	ND	1.32	ND	0.262	0.015	ND	2.18	ND	ND	ND	ND	1.75	0.0294	ND	ND	
	RISK TPH C8 C10 ALI		>Sat	>Sat	mg/kg	1.14	0.753	0.0325	ND	ND	ND	ND	ND	0.185	0.0229	ND	ND	1.64	ND	0.527	0.0138	ND	2.38	0.0199	ND	ND	ND	18.5	0.159	ND	ND	
	RISK TPH C10 C12 ALI		>Sat	>Sat	mg/kg	1.51	0.77	0.0863	ND	ND	ND	ND	ND	0.224	0.0444	ND	ND	2.81	ND	0.659	0.01	ND	1.82	0.0293	ND	ND	ND	45.7	0.502	ND	ND	
	RISK TPH C12 C16 ALI		>Sat	>Sat	mg/kg	5.78	ND	ND	2.94	ND	ND	ND	1.61	38.5	ND	ND	8.37	3.73	12.8	5.33	ND	3.7	ND	ND	0.331	5.41	8.54	20.9	ND	4.98	4.84	
	RISK TPH C16 C21 ALI		>Sat	>Sat	mg/kg	2.03	ND	ND	1.85	ND	ND	ND	1.37	169	ND	ND	3.43	2.43	61.7	1.31	ND	1.93	ND	ND	2.73	0.577	5.26	40.8	ND	2.76	4.19	
	RISK TPH C21 C35 ALI		>Sat	>Sat	mg/kg	ND	ND	ND	5.88	ND	ND	ND	83.6	ND	ND	11	9.53	94.2	8.3	ND	ND	23.2	ND	ND	ND	ND	5.14	117	ND	7.46	14.9	
	RISK TPH C35 C44 ALI		>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	8.26	ND	ND	5.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	84.7	ND	8.1	18.6	
	TPH STAGE2 HI		1	(blank)	ratio	0.019303	0.0099997	0.0004691	0.0005819	0.0001416	0.0001395	0.0003748	0.00033648	0.0015232	0.0003007	0.0012548	0.0007793	0.0171012	0.0009485	0.0055028	0.0012592	0.000497	0.0212089	0.0005837	0.0008833	0.0012907	0.003116	0.1729226	0.0023881	0.000746	0.0002749	
	VOC	DIFE		>Sat	42.9	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TAME			>Sat	20.8	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
ETBE			>Sat	65.1	mg/kg	0.0199	0.0794	ND	ND	ND	ND	0.00402	ND	ND	0.0089	0.00126	0.00497	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0264	ND	ND	ND	ND	
ETHANOL			(blank)	(blank)	mg/kg	0.718	ND	ND	ND	ND	ND	ND	0.718	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TBA			>Sat	3330	mg/kg	2.74	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0127	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0172	ND	ND
MTBE		>Sat	685	mg/kg	2.78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	

XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria
XX	Sample removed from site

CSM / Assumptions:
Soil 1% SOM (0.58% TOC)
Soil properties for "sand"
Commercial site area 0.5ha
Soil gas ingress rates calculated by model
Infinite groundwater source at 1m.bgl for groundwater GAC
High density residential assume vapour exposure pathways only
CPU scenario modified from modelled commercial scenario by
Building dimensions (l x w x h): 14m x 6.5m x 2.4m
Differential pressure: 2.5 pascals
Only vapour exposure pathways considered viable
Derived November 2010 using Human7.1 Issue6. MTF.

ND: Not detected above MDL
HH: Human Health
GAC: Generic Assessment Criteria
NP: No criteria
>Sat: Unacceptable risk not achieved due to calculated saturation of vapour pathway
NT: Not tested

TABLE 1
SOIL ANALYTICAL DATA WITH CPU GAC AND STAGE 3 CONTROLLED WATERS SSAC

Human Health Criteria		Stage 2 CPU GAC													
Controlled Waters Criteria		Stage 3 SSAC													
Sample Round		[AII]													
Site		Hitchin													
		VA146	VA147	VA148	VA149	VA150	VA151	VA152	VA153	VA154	VA155	WAC 2			
		5	6.5	6	6	7	1.2	1.2	1.2	1.2	3	0			
Chem Class	Analyte	HH	CW	Units	17/04/2013	17/04/2013	20/05/2013	20/05/2013	20/05/2013	22/05/2013	22/05/2013	22/05/2013	20/05/2013		
BTEX	BENZENE	2.73	0.121	mg/kg	ND	ND	1.66	ND	ND	ND	ND	ND	NT		
	TOLUENE	>Sat	77.3	mg/kg	0.00952	ND	1.66	0.00948	0.00797	ND	0.0079	0.00754	ND	0.0196	NT
	ETHYLBENZENE	>Sat	76.2	mg/kg	0.0108	ND	3.33	0.276	0.00873	ND	ND	ND	0.0093	NT	
	M P XYLENE	613	133	mg/kg	ND	ND	20.1	2.02	ND	ND	ND	ND	ND	NT	
	O XYLENE	>Sat	133	mg/kg	ND	ND	9.48	1.18	ND	ND	ND	ND	ND	NT	
PAH	ACENAPHTHENE	>Sat	>Sat	mg/kg	ND	ND	0.0817	ND	ND	ND	NT	ND	NT	ND	NT
	ACENAPHTHYLENE	>Sat	16.6	mg/kg	ND	ND	0.0301	ND	ND	ND	NT	ND	NT	ND	NT
	ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	0.222	0.0263	ND	ND	NT	ND	NT	ND	NT
	BENZO A ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	0.112	0.0181	ND	ND	NT	ND	NT	ND	NT
	BENZO A PYRENE	>Sat	>Sat	mg/kg	ND	ND	0.0905	ND	ND	ND	NT	ND	NT	ND	NT
	BENZO B FLUORANTHENE	>Sat	>Sat	mg/kg	ND	ND	0.0865	ND	ND	ND	NT	ND	NT	ND	NT
	BENZO G H I PERYLENE	>Sat	>Sat	mg/kg	ND	ND	0.0996	ND	ND	ND	NT	ND	NT	ND	NT
	BENZO K FLUORANTHENE	>Sat	>Sat	mg/kg	ND	ND	0.0327	ND	ND	ND	NT	ND	NT	ND	NT
	CHRYSENE	>Sat	>Sat	mg/kg	ND	ND	0.0774	ND	ND	ND	NT	ND	NT	ND	NT
	DIBENZ A H ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	0.0413	ND	ND	ND	NT	ND	NT	ND	NT
	FLUORANTHENE	>Sat	7.99	mg/kg	ND	ND	0.245	0.0281	ND	ND	NT	ND	NT	ND	NT
	FLUORENE	>Sat	>Sat	mg/kg	ND	ND	0.337	0.0294	ND	ND	NT	ND	NT	ND	NT
	INDENO 1 2 3 CD PYRENE	>Sat	>Sat	mg/kg	ND	ND	0.0413	ND	ND	ND	NT	ND	NT	ND	NT
	NAPHTHALENE	19.9	0.28	mg/kg	ND	ND	12.8	0.0472	ND	0.0109	NT	0.02	NT	0.0128	NT
	PHENANTHRENE	>Sat	>Sat	mg/kg	ND	ND	0.78	0.0892	ND	ND	NT	ND	NT	ND	NT
	PYRENE	>Sat	>Sat	mg/kg	ND	ND	0.407	0.0509	ND	ND	NT	ND	NT	ND	NT
	TOTAL PAH	(blank)	(blank)	mg/kg	ND	ND	15.4	0.289	ND	ND	NT	ND	NT	ND	NT
RISKTPH	RISK TPH C6 C7 AROM	>Sat	>Sat	mg/kg	ND	ND	0.697	ND	ND	ND	ND	ND	ND	0.0112	NT
	RISK TPH C7 C8 AROM	>Sat	>Sat	mg/kg	ND	ND	387	13.1	0.0538	0.0123	ND	ND	ND	0.0594	NT
	RISK TPH C8 C10 AROM	>Sat	>Sat	mg/kg	0.0122	ND	384	15.3	0.0526	0.0336	ND	ND	ND	0.0325	NT
	RISK TPH C10 C12 AROM	>Sat	>Sat	mg/kg	ND	ND	125	15.3	0.0526	0.0336	ND	ND	ND	0.0325	NT
	RISK TPH C12 C16 AROM	>Sat	>Sat	mg/kg	8.85	3.93	27.6	4.92	5.09	6.25	1.56	2.68	4.31	2.74	NT
	RISK TPH C16 C21 AROM	>Sat	>Sat	mg/kg	4.88	3.73	60	7.77	3.8	22.6	2.76	3.17	5.18	3.32	NT
	RISK TPH C21 C35 AROM	>Sat	>Sat	mg/kg	10.1	6.52	207	27.4	7.63	19.7	7.34	9	14.7	10.1	NT
	RISK TPH C5 C8 ALI	369	>Sat	mg/kg	ND	ND	6.49	ND	ND	ND	ND	ND	ND	ND	NT
	RISK TPH C8 C8 ALI	>Sat	>Sat	mg/kg	ND	ND	183	1.11	0.0493	ND	ND	ND	ND	0.0123	NT
	RISK TPH C8 C10 ALI	>Sat	>Sat	mg/kg	ND	ND	312	16.7	0.0728	0.0134	ND	ND	ND	0.0514	NT
	RISK TPH C10 C12 ALI	>Sat	>Sat	mg/kg	ND	ND	187	23	0.0795	0.0504	ND	ND	ND	0.0482	NT
	RISK TPH C12 C16 ALI	>Sat	>Sat	mg/kg	ND	4.7	23.2	8.63	7.4	11.8	2.93	5.46	10.6	2.99	NT
	RISK TPH C16 C21 ALI	>Sat	>Sat	mg/kg	ND	1.85	70.5	8	2.89	27.1	3.92	4.22	7.43	NT	NT
	RISK TPH C21 C35 ALI	>Sat	>Sat	mg/kg	ND	ND	454	55.8	5.51	14.1	11.8	12.4	18.9	3.7	NT
	RISK TPH C35 C44 ALI	>Sat	>Sat	mg/kg	ND	ND	108	12.6	ND	ND	2.37	2.42	3.67	ND	NT
	TPH STAGE2 HI	1	(blank)	ratio	0.0005151	0.0008075	0.012215312	0.278105773	0.003349201	0.001774657	0.000519662	0.000844133	0.001479102	0.00081915	NT
	VOC	DIPE	42.9	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TAME		20.8	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
ETBE		65.1	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
ETHANOL		(blank)	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
TBA		3330	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	0.0147	ND	NT
	MTBE	685	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT

XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria
XX	Sample removed from site

CSM / Assumptions:
Soil 1% SOM (0.58% TOC)
Soil properties for "sand"
Commercial site area 0.5ha
Soil gas ingress rates calculated by model
Infinite groundwater source at 1m.bgl for groundwater GAC
High density residential assume vapour exposure pathway only
CPU scenario modified from modelled commercial scenario by:
Building dimensions (l x w x h): 14m x 6.5m x 2.4m
Differential pressure: 2.6 pascals
Only vapour exposure pathways considered viable
Derived November 2010 using Human7.1 Issue9. MTF.

ND: Not detected above MDL
HH: Human Health
GAC: Generic Assessment Criteria
(blank): No criteria
NP: No pathway
>Sat: Unacceptable risk not achieved due to calculated saturation of vapour pathway
NT: Not tested

TABLE 2
SOIL ANALYTICAL DATA WITH HDR GAC AND STAGE 3 CONTROLLED WATERS SSAC

Human Health Criteria	Stage 2 HDR GAC
Controlled Waters Criteria	Stage 3 SSAC
Sample Round	(All)
Site	Hitchin

	Chem Class	Analyte	HH	CW	Units	BACKFILL01	BACKFILL02	BACKFILL03	FILL	MW102	VA101	VA102	VA103	VA104	VA105	VA106	VA107	VA108	VA109	VA110	VA111	VA112	VA113	VA114	VA115	VA116	VA117	VA118	VA119	
			12/04/2013	12/04/2013	12/04/2013	20/05/2013	12/08/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	09/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
BTEX		BENZENE	0.0928	0.121	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0107	0.0113	ND	ND	ND	ND	0.426	0.35	ND	ND
		TOLUENE	222	77.3	mg/kg	ND	ND	ND	0.00618	ND	ND	ND	ND	ND	0.84	ND	0.185	0.0076	0.00892	ND	0.0113	0.0448	ND	ND	120	3.44	0.284	0.00699	0.0111	
		ETHYLBENZENE	60.1	76.2	mg/kg	ND	ND	ND	0.012	ND	ND	ND	0.00686	ND	5.3	ND	3.03	0.0109	0.0108	0.0261	0.0188	0.691	0.00771	0.00868	237	10.5	0.854	0.00788	0.0602	
		M P XYLENE	19.7	133	mg/kg	ND	ND	ND	0.039	ND	ND	ND	ND	ND	ND	ND	ND	0.02	0.0203	0.0279	0.0257	3.99	ND	ND	1070	4.3	2.31	0.432	0.432	
		O XYLENE	21.1	133	mg/kg	ND	ND	ND	0.0153	ND	ND	ND	ND	ND	17.3	ND	ND	ND	ND	0.0337	0.0159	2.16	ND	ND	411	19.3	0.973	ND	0.262	
PAH		ACENAPHTHENE	>Sat	>Sat	mg/kg	ND	0.00885	ND	ND	ND	ND	ND	ND	ND	0.0537	ND	0.0403	ND	ND	ND	ND	ND	ND	ND	ND	0.272	ND	ND	ND	
		ACENAPHTHYLENE	>Sat	16.6	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0766	ND	ND	ND	
		ANTHRACENE	>Sat	>Sat	mg/kg	0.0236	ND	ND	0.0177	ND	ND	ND	ND	ND	0.102	ND	0.0754	ND	ND	ND	ND	ND	ND	ND	ND	0.586	ND	ND	ND	
		BENZO A ANTHRACENE	>Sat	>Sat	mg/kg	0.0696	0.0354	0.0496	0.0497	ND	ND	ND	ND	ND	0.0391	ND	0.0235	ND	ND	ND	ND	ND	ND	ND	ND	0.168	ND	ND	ND	
		BENZO A PYRENE	>Sat	>Sat	mg/kg	0.058	0.0315	0.0395	0.0705	ND	ND	ND	ND	ND	0.0214	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.113	ND	ND	ND	
		BENZO B FLUORANTHENE	>Sat	>Sat	mg/kg	0.0665	0.0391	0.0545	0.0667	ND	ND	ND	ND	ND	0.0227	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.125	ND	ND	ND	
		BENZO G H I PERYLENE	>Sat	>Sat	mg/kg	0.0418	0.0285	0.0308	0.0457	ND	ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.168	ND	ND	ND	
		BENZO K FLUORANTHENE	>Sat	>Sat	mg/kg	0.0289	0.018	0.0207	0.0292	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0419	ND	ND	ND	
		CHRYSENE	>Sat	>Sat	mg/kg	0.0519	0.0433	0.0472	0.0387	ND	ND	ND	ND	ND	0.0308	ND	0.0216	ND	ND	ND	ND	ND	ND	ND	ND	0.138	ND	ND	ND	
		DIBENZO A H ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
		FLUORANTHENE	>Sat	7.99	mg/kg	0.126	0.0864	0.106	0.102	ND	ND	ND	ND	ND	0.0775	ND	0.0548	ND	ND	ND	ND	ND	ND	ND	ND	0.45	ND	ND	ND	
		FLUORENE	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.162	ND	0.127	ND	ND	ND	ND	ND	ND	ND	ND	0.365	0.0127	ND	0.0206	
		INDENO 1,2,3 CD PYRENE	>Sat	>Sat	mg/kg	0.0318	0.0192	0.0228	0.0356	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0397	ND	ND	ND	
		NAPHTHALENE	0.599	0.28	mg/kg	ND	ND	ND	0.0102	ND	ND	ND	0.0137	ND	1.19	0.035	3.88	0.0208	0.0427	ND	0.038	0.0215	0.0205	ND	30.9	0.193	0.0371	ND	0.0908	
		PHENANTHRENE	>Sat	>Sat	mg/kg	0.0664	0.0654	0.0549	0.0562	ND	ND	ND	ND	ND	0.347	ND	0.262	ND	ND	ND	0.0392	0.0432	ND	ND	2.02	0.0456	ND	ND	0.049	
		PYRENE	>Sat	>Sat	mg/kg	0.109	0.0746	0.093	0.105	ND	ND	ND	ND	ND	0.141	ND	0.104	ND	ND	ND	0.0223	0.0206	ND	ND	0.923	ND	ND	ND	6.6	
		TOTAL PAH	(blank)	(blank)	mg/kg	0.674	0.45	0.518	0.629	ND	ND	ND	ND	ND	ND	2.24	ND	4.59	ND	ND	ND	ND	ND	ND	46	0.252	ND	ND	0.16	
RISKTPH		RISK TPH C6 C7 AROM	92	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0162	ND	ND	ND	3.73	0.348	0.236	ND	ND	
		RISK TPH C7 C8 AROM	222	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.122	ND	ND	ND	ND	ND	ND	ND	ND	70.9	3.31	0.166	ND	ND	
		RISK TPH C8 C10 AROM	12.9	>Sat	mg/kg	ND	ND	ND	0.0532	ND	ND	ND	ND	ND	ND	0.15	0.164	0.168	0.0597	0.287	0.113	0.0293	0.142	1.17	6.27	0.0221	ND	ND		
		RISK TPH C10 C12 AROM	70.6	>Sat	mg/kg	ND	ND	ND	0.0276	ND	ND	ND	ND	ND	ND	0.418	0.121	0.144	0.168	0.0597	0.287	0.113	0.0293	0.142	1.17	6.27	0.0221	ND	ND	
		RISK TPH C12 C16 AROM	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.93	9.24	4.72	ND	ND	ND	ND	ND	ND	55.3	3.48	1.94	3.24	2.82	
		RISK TPH C16 C21 AROM	>Sat	>Sat	mg/kg	0.83	0.902	ND	4.1	ND	ND	ND	ND	ND	6.51	ND	12.5	ND	ND	ND	ND	ND	ND	ND	102	6.53	2.97	2.98	4.81	
		RISK TPH C21 C35 AROM	>Sat	>Sat	mg/kg	ND	ND	ND	11.4	0.301	ND	ND	ND	ND	ND	69.5	ND	43.6	ND	ND	ND	ND	ND	ND	290	18.2	8.01	7.63	8.58	
		RISK TPH C5 C6 ALI	14	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.162	0.0192	0.484	0.0109	0.014	0.0121	0.106	0.0134	ND	ND	18.5	2.42	0.616	ND	0.247	
		RISK TPH C6 C8 ALI	30.7	>Sat	mg/kg	ND	ND	ND	0.0391	ND	ND	ND	ND	ND	ND	0.151	6.47	0.035	0.048	ND	0.0666	8.33	0.0459	0.010	1.14	ND	ND	6.6		
		RISK TPH C8 C10 ALI	7.46	>Sat	mg/kg	ND	ND	ND	0.0361	ND	ND	ND	ND	ND	ND	0.226	1.14	0.106	0.151	ND	0.25	0.103	0.0105	ND	ND	3.32	0.0143	ND	ND	
		RISK TPH C10 C12 ALI	36.4	>Sat	mg/kg	ND	ND	ND	0.0415	ND	ND	ND	ND	ND	ND	0.627	9.52	0.182	0.216	ND	0.926	14.7	0.189	0.0105	ND	28.7	2.28	0.0169	16.9	
		RISK TPH C12 C16 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	6.76	0.212	5.84	ND	8.48	ND	29.7	ND	7.17	ND	ND	ND	4.57	3.57	ND	ND	54.4	4.5	2.69	5.89	3.85	
		RISK TPH C16 C21 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	3.28	0.347	7.19	ND	7.55	ND	40.9	ND	19	ND	ND	ND	11.4	4.38	ND	ND	211	6.39	1.24	1.65	3.63	
		RISK TPH C21 C35 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	9.99	0.276	22.6	ND	22.6	ND	175	ND	120	ND	ND	ND	22.8	24.2	ND	ND	1410	29.1	2.71	4.1	ND	
		RISK TPH C35 C44 ALI	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	33.3	ND	22.1	ND	ND	ND	ND	3.12	ND	ND	352	ND	ND	ND	ND	
		TPH STAGE2 HI	1	(blank)	ratio	0.0041992	0.004201	0.0041805	0.080425511	0.0045595	0.023284641	0.004180514	0.0040700495	0.004180514	0.004180514	0.071873213	0.036131467	0.044360027	0.008036249	0.110543	0.0318365	0.0057584	0.0057584	0.0057584	0.0057584	0.0057584	0.0057584	0.0057584	0.0057584	
VOC		DIPE	1.52	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
		TAME	0.738	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
		ETBE	2.31	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
		ETHANOL	(blank)	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
		TBA	111	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.108	0.0548
	MTBF	MTBF	23.5	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria
XX	Sample removed from site

CSM / Assumptions:
Soil 1% SOM (0.58% TOC)
Soil properties for "sand"
Commercial site area 0.5ha
Soil gas ingress rates calculated by model
Infinite groundwater source at 1m.bgl for groundwater GAC
High density residential assume vapour exposure pathways only
CPU scenario modified from modelled commercial scenario by:
Building dimensions (l x w x h): 14m x 6.5m x 2.4m
Differential pressure: 2.6 pascals
Only vapour exposure pathways considered viable
Derived November 2010 using Human7.1 Issue9. MTF.
ND: Not detected above MDL
HH: Human Health
GAC: Generic Assessment Criteria
(blank): No criteria
NP: No pathway
>Sat: Unacceptable risk not achieved due to calculated saturation of vapour pathway
NT: Not tested

TABLE 2
SOIL ANALYTICAL DATA WITH HDR GAC AND STAGE 3 CONTROLLED WATERS SSAC

Human Health Criteria	Stage 2 HDR GAC
Controlled Waters Criteria	Stage 3 SSAC
Sample Round	(All)
Site	Hitchin

	Chem 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XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria
XX	Sample removed from site

CSM / Assumptions:
 Soil 1% SOM (0.58% TOC)
 Soil properties for "sand"
 Commercial site area 0.5-ha
 Soil gas ingress rates calculated by model
 Infinite groundwater source at 1m.bgl for groundwater GAC
 High density residential assume vapour exposure pathways only
 CPU scenario modified from modelled commercial scenario by:
 Building dimensions (l x w x h): 14m x 6.5m x 2.4m
 Differential pressure: 2.6 pascals
 Only vapour exposure pathways considered viable
 Derived November 2010 using Human7.1 Issue6, MTF.

ND: Not detected above MDL
 HH: Human Health
 GAC: Generic Assessment Criteria
 (blank): No criteria
 NP: No pathway
 >Sat: Unacceptable risk not achieved due to calculated saturation of vapour pathway
 NT: Not tested

TABLE 2
SOIL ANALYTICAL DATA WITH HDR GAC AND STAGE 3 CONTROLLED WATERS SSAC

Human Health Criteria	Stage 2 HDR GAC
Controlled Waters Criteria	Stage 3 SSAC
Sample Round	(All)
Site	Hitchin

Chem Class	Analyte	HH	CW	Units	VA146	VA147	VA148	VA149	VA150	VA51	VA52	VA53	VA54	VA55	WAC 2
					17/04/2013	17/04/2013	20/05/2013	20/05/2013	20/05/2013	22/05/2013	22/05/2013	22/05/2013	22/05/2013	22/05/2013	20/05/2013
BTX	BENZENE	0.0928	0.121	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
	TOLUENE	222	77.3	mg/kg	0.00952	ND	1.66	0.00948	0.00797	ND	0.0079	0.00754	ND	0.0196	NT
	ETHYLBENZENE	60.1	76.2	mg/kg	0.0108	ND	3.33	0.276	0.00973	ND	ND	ND	ND	0.0093	NT
	M P XYLENE	19.7	133	mg/kg	ND	ND	3.3	2.02	ND	ND	ND	ND	ND	ND	NT
	O XYLENE	21.1	133	mg/kg	ND	ND	9.48	1.18	ND	ND	ND	ND	ND	ND	NT
PAH	ACENAPHTHENE	>Sat	>Sat	mg/kg	ND	ND	0.0817	ND	ND	ND	NT	ND	NT	ND	NT
	ACENAPHTHYLENE	>Sat	16.6	mg/kg	ND	ND	0.0301	ND	ND	ND	NT	ND	NT	ND	NT
	ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	0.222	0.0263	ND	ND	NT	ND	NT	ND	NT
	BENZO A ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	0.112	0.0161	ND	ND	NT	ND	NT	ND	NT
	BENZO A PYRENE	>Sat	>Sat	mg/kg	ND	ND	0.0605	ND	ND	ND	NT	ND	NT	ND	NT
	BENZO B FLUORANTHENE	>Sat	>Sat	mg/kg	ND	ND	0.0865	ND	ND	ND	NT	ND	NT	ND	NT
	BENZO G H I PERYLENE	>Sat	>Sat	mg/kg	ND	ND	0.0996	ND	ND	ND	NT	ND	NT	ND	NT
	BENZO K FLUORANTHENE	>Sat	>Sat	mg/kg	ND	ND	0.0327	ND	ND	ND	NT	ND	NT	ND	NT
	CHRYSENE	>Sat	>Sat	mg/kg	ND	ND	0.0774	ND	ND	ND	NT	ND	NT	ND	NT
	DIBENZ A H ANTHRACENE	>Sat	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	NT	ND	NT	ND	NT
	FLUORANTHENE	>Sat	7.99	mg/kg	ND	ND	0.245	0.0281	ND	ND	NT	ND	NT	ND	NT
	FLUORENE	>Sat	>Sat	mg/kg	ND	ND	0.337	0.0284	ND	ND	NT	ND	NT	ND	NT
	INDENO 1 2 3 CD PYRENE	>Sat	>Sat	mg/kg	ND	ND	0.0413	ND	ND	ND	NT	ND	NT	ND	NT
	NAPHTHALENE	0.599	0.28	mg/kg	ND	ND	123	0.0472	ND	0.0109	NT	0.02	NT	0.0128	NT
	PHENANTHRENE	>Sat	>Sat	mg/kg	ND	ND	0.78	0.0892	ND	ND	NT	ND	NT	ND	NT
	PYRENE	>Sat	>Sat	mg/kg	ND	ND	0.407	0.0509	ND	ND	NT	ND	NT	ND	NT
	TOTAL PAH	(blank)	(blank)	mg/kg	ND	ND	15.4	0.289	ND	ND	NT	ND	NT	ND	NT
RISKTPH	RISK TPH C6 C7 AROM	92	>Sat	mg/kg	ND	ND	0.697	ND	ND	ND	ND	ND	ND	ND	NT
	RISK TPH C7 C8 AROM	222	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0112	NT
	RISK TPH C8 C10 AROM	12.9	>Sat	mg/kg	0.0122	ND	3.3	0.13	0.0538	0.0123	ND	ND	ND	0.0504	NT
	RISK TPH C10 C12 AROM	70.6	>Sat	mg/kg	ND	ND	ND	15.3	0.0526	0.0336	ND	ND	ND	0.0325	NT
	RISK TPH C12 C16 AROM	>Sat	>Sat	mg/kg	ND	ND	8.85	3.93	4.92	5.08	6.25	1.56	2.68	4.31	2.74
	RISK TPH C16 C21 AROM	>Sat	>Sat	mg/kg	ND	ND	4.88	3.73	60	7.77	3.8	22.6	2.76	3.17	5.16
	RISK TPH C21 C35 AROM	>Sat	>Sat	mg/kg	10.1	6.52	207	27.4	7.63	19.7	7.34	9	14.7	10.1	NT
	RISK TPH C5 C6 ALI	14	>Sat	mg/kg	ND	ND	6.49	ND	ND	ND	ND	ND	ND	ND	NT
	RISK TPH C6 C8 ALI	30.7	>Sat	mg/kg	ND	ND	ND	1.11	0.0493	ND	ND	ND	ND	0.0123	NT
	RISK TPH C8 C10 ALI	7.46	>Sat	mg/kg	ND	ND	ND	417	1.97	0.0728	0.0134	ND	ND	0.0314	NT
	RISK TPH C10 C12 ALI	36.4	>Sat	mg/kg	ND	ND	ND	23	0.0795	0.0504	ND	ND	ND	0.0482	NT
	RISK TPH C12 C16 ALI	>Sat	>Sat	mg/kg	ND	4.7	22.2	8.63	7.4	11.9	2.93	6.46	10.6	2.99	NT
	RISK TPH C16 C21 ALI	>Sat	>Sat	mg/kg	ND	1.85	70.5	8	2.89	27.1	3.92	4.22	7.43	3.7	NT
	RISK TPH C21 C35 ALI	>Sat	>Sat	mg/kg	ND	ND	454	55.8	5.51	14.1	11.8	12.4	18.9	3.7	NT
	RISK TPH C35 C44 ALI	>Sat	>Sat	mg/kg	ND	ND	108	12.6	ND	ND	2.37	2.42	3.67	ND	NT
VOC	TPH STAGE2 HI	1	(blank)	ratio	0.0154407	0.0242349	0.03025137	0.03025137	0.100493717	0.053274006	0.015593878	0.025357909	0.044407117	0.024574453	NT
	DIPE	1.52	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
	EAHE	0.738	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
	ETBE	2.31	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
	ETHANOL	(blank)	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
	TBA	111	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.0147	ND	ND	NT
	MTBE	23.5	>Sat	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT

XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria
XX	Sample removed from site

CSM / Assumptions:
Soil 1% SOM (0.58% TOC)
Soil properties for "sand"
Commercial site area 0.5ha
Soil gas ingress rates calculated by model
Infinite groundwater source at 1m.bgl for groundwater GAC
High density residential assume vapour exposure pathways only
CPU scenario modified from modelled commercial scenario by:
Building dimensions (l x w x h): 14m x 6.5m x 2.4m
Differential pressure: 2.6 pascals
Only vapour exposure pathways considered viable
Derived November 2010 using Human7.1 Issue9. MTF.

ND: Not detected above MDL
HH: Human Health
GAC: Generic Assessment Criteria
(blank): No criteria
NP: No pathway
>Sat: Unacceptable risk not achieved due to calculated saturation of vapour pathway
NT: Not tested

TABLE 3
GROUNDWATER ANALYTICAL DATA WITH HDR GAC and CW SSAC

Human Health Criteria	Stage 2 HDR GAC
Controlled Waters Criteria	Stage 3 SSAC (Drift Model)
Sample Round	ALL
Site	Hitchin

							BH101			BH102				BH102A			BH103				BH105	BH105A		
Chem Class	Analyte	HH	CW (Chalk Model)	CW (Drift Model)	MDL	Units	12/10/2011	27/02/2012	22/01/2013	12/10/2011	27/02/2012	22/01/2013	04/09/2013	27/02/2012	22/01/2013	04/09/2013	12/10/2011	27/02/2012	11/01/2013	04/09/2013	12/10/2011	27/02/2012	11/01/2013	
BTEX							W	W	W	W	W	W	0	W	W	0	W	W	W	0	W	W	W	
	BENZENE	1100	747	63.7	1	µg/l	ND	ND	ND	1460	1100	282	303	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	TOLUENE	>Sat	>Sol	>Sol	1	µg/l	ND	ND	ND	465	150	241	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ETHYLBENZENE	173000	>Sol	>Sol	1	µg/l	ND	ND	ND	2350	3600	3760	756	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	M P_XYLENE	51600	>Sol	>Sol	1	µg/l	ND	ND	ND	6480	9330	12400	1570	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	O_XYLENE	62100	>Sol	>Sol	1	µg/l	ND	ND	ND	2460	4380	4500	389	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
PAH	Acenaphthene	>Sat	>Sol	>Sol	0.015	µg/l	ND	ND	ND	ND	0.193	2.35	0.0771	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	ACENAPHTHYLENE	>Sat	16000	>Sol	0.011	µg/l	ND	ND	ND	ND	0.0456	0.753	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	Anthracene	>Sat	>Sol	>Sol	0.015	µg/l	ND	ND	ND	ND	0.0315	1.43	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND		
	BENZO A ANTHRACENE	>Sat	>Sol	>Sol	0.017	µg/l	ND	ND	ND	ND	ND	0.495	ND	ND	ND	ND	ND	ND	ND	NT	0.0343	ND		
	BENZO A PYRENE	>Sat	>Sol	>Sol	0.009	µg/l	ND	ND	ND	ND	ND	0.359	ND	ND	ND	0.0245	ND	ND	ND	ND	NT	0.04	ND	
	BENZO B FLUORANTHENE	>Sat	>Sol	>Sol	0.023	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0232	ND	ND	ND	ND	NT	0.0322	ND	
	BENZO G H I PERYLENE	>Sat	>Sol	>Sol	0.016	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0278	ND	ND	ND	ND	NT	0.0175	ND	
	BENZO K FLUORANTHENE	>Sat	>Sol	>Sol	0.027	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	0.0431	ND	
	CHRYSENE	>Sat	>Sol	>Sol	0.013	µg/l	ND	ND	ND	ND	ND	0.639	ND	ND	ND	0.0256	ND	ND	ND	ND	NT	0.029	ND	
	DIBENZ A H ANTHRACENE	>Sat	>Sol	>Sol	0.016	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	FLUORANTHENE	>Sat	>Sol	>Sol	0.017	µg/l	ND	ND	ND	ND	0.0182	1.21	ND	ND	ND	0.0222	ND	ND	ND	ND	NT	0.0634	ND	
	FLUORENE	>Sat	>Sol	>Sol	0.014	µg/l	ND	ND	ND	ND	0.205	0.387	5.51	0.176	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	INDENO 1 2 3 CD PYRENE	>Sat	>Sol	>Sol	0.014	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0197	ND	ND	ND	ND	NT	0.0183	ND
	NAPHTHALENE	640	874	1120	0.1	µg/l	ND	0.168	ND	175	289	560	67.3	ND	ND	ND	ND	0.143	ND	ND	NT	ND	ND	
	PHENANTHRENE	>Sat	>Sol	>Sol	0.022	µg/l	ND	ND	ND	ND	0.146	7.34	0.148	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
Pyrene	>Sat	>Sol	>Sol	0.015	µg/l	ND	ND	0.0165	ND	0.0234	2.11	ND	ND	0.0165	0.0245	ND	ND	ND	ND	NT	0.0718	ND		
VOC	DIPE	25300	120	120	1	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ETBE	34600	40	40	1	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ETHANOL	(blank)	1100000	1100000	50	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MTBE	331000	30	30	1	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	TAME	11700	140	140	1	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	TBA	628000	40	40	10	µg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
RISKTPH	RISK TPH C6 C7 AROM	1090000	7430	669	10	µg/l	ND	ND	ND	1210	731	176	241	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C7 C8 AROM	>Sat	>Sol	>Sol	10	µg/l	17	ND	ND	392	131	148	29	ND	ND	ND	14	ND	ND	ND	ND	ND	ND	
	RISK TPH C8 C10 AROM	9830	>Sol	>Sol	10	µg/l	12	ND	ND	13300	14500	19600	2420	ND	ND	ND	12	ND	ND	ND	ND	ND	ND	
	RISK TPH C10 C12 AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	1010	934	4820	197	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C12 C16 AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	143	306	2120	29	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	RISK TPH C16 C21 AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	ND	17	617	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	RISK TPH C21 C35 AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	ND	ND	307	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	RISK TPH C5 C6 ALI	10300	>Sol	>Sol	10	µg/l	ND	ND	ND	308	646	1510	38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C6 C8 ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	697	1430	6350	104	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C8 C10 ALI	302	>Sol	>Sol	10	µg/l	ND	ND	ND	3220	3250	9340	611	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C10 C12 ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	1510	1400	7230	295	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	RISK TPH C12 C16 ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	ND	ND	1950	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	RISK TPH C16 C21 ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	ND	ND	762	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	RISK TPH C21 C35 ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND	ND	ND	766	ND	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	
	TPH_STAGE2_HI	1	(blank)	(blank)	10	ratio	0.0986376	0.0046095	0.0984283	3.1001248	3.1800256	4.5861068	1.012	0.0046095	0.0984283	0.0984283	0.0986376	0.0046095	0.0984283	0.0984283	0.0041197	0.0046095	0.0984283	

XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria

CSM / Assumptions:
Soil 1% SOM (0.58% TOC)
Soil properties for "sand"
Commercial site area 0.5ha
Soil gas ingress rates calculated by model
Infinite groundwater source at 1m.bgl for groundwater GAC
High density residential assume vapour exposure pathways only
CPU scenario modified from modelled commercial scenario by:
Building dimensions (l x w x h): 14m x 6.5m x 2.4m
Differential pressure: 2.6 pascals
Only vapour exposure pathways considered viable
Derived November 2010 using Human7.1 Issue9. MTF.

TABLE 3
GROUNDWATER ANALYTICAL DATA WITH HDR GAC and CW SSAC

Human Health Criteria	Stage 2 HDR GAC
Controlled Waters Criteria	Stage 3 SSAC (Drift Model)
Sample Round	ALL
Site	Hitchin

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								BH106A	
							04/09/2013	27/02/2012	11/01/2013
Chem Class	Analyte	HH	CW (Chalk Model)	CW (Drift Model)	MDL	Units	0	W	W
BTEX	BENZENE	1100	747	63.7	1	µg/l	ND	ND	ND
	TOLUENE	>Sat	>Sol	>Sol	1	µg/l	ND	ND	ND
	ETHYLBENZENE	173000	>Sol	>Sol	1	µg/l	ND	ND	ND
	M_P_XYLENE	51600	>Sol	>Sol	1	µg/l	ND	ND	ND
	O_XYLENE	62100	>Sol	>Sol	1	µg/l	ND	ND	ND
PAH	Acenaphthene	>Sat	>Sol	>Sol	0.015	µg/l	ND	ND	ND
	ACENAPHTHYLENE	>Sat	16000	>Sol	0.011	µg/l	ND	0.0125	ND
	Anthracene	>Sat	>Sol	>Sol	0.015	µg/l	ND	0.0234	ND
	BENZO_A_ANTHRACENE	>Sat	>Sol	>Sol	0.017	µg/l	ND	0.0679	ND
	BENZO_A_PYRENE	>Sat	>Sol	>Sol	0.009	µg/l	ND	0.0397	ND
	BENZO_B_FLUORANTHENE	>Sat	>Sol	>Sol	0.023	µg/l	ND	0.0372	ND
	BENZO_G_H_I_PERYLENE	>Sat	>Sol	>Sol	0.016	µg/l	ND	0.0233	ND
	BENZO_K_FLUORANTHENE	>Sat	>Sol	>Sol	0.027	µg/l	ND	0.0408	ND
	CHRYSENE	>Sat	>Sol	>Sol	0.013	µg/l	ND	0.0567	ND
	DIBENZ_A_H_ANTHRACENE	>Sat	>Sol	>Sol	0.016	µg/l	ND	ND	ND
	FLUORANTHENE	>Sat	>Sol	>Sol	0.017	µg/l	ND	0.19	ND
	FLUORENE	>Sat	>Sol	>Sol	0.014	µg/l	ND	ND	ND
	INDENO_1_2_3_CD_PYRENE	>Sat	>Sol	>Sol	0.014	µg/l	ND	0.0216	ND
	NAPHTHALENE	640	874	1120	0.1	µg/l	ND	ND	ND
	PHENANTHRENE	>Sat	>Sol	>Sol	0.022	µg/l	ND	0.0295	ND
	Pyrene	>Sat	>Sol	>Sol	0.015	µg/l	ND	0.138	ND
VOC	DIPE	25300	120	120	1	µg/l	ND	ND	ND
	ETBE	34600	40	40	1	µg/l	ND	ND	ND
	ETHANOL	(blank)	1100000	1100000	50	µg/l	ND	ND	ND
	MTBE	331000	30	30	1	µg/l	ND	ND	ND
	TAME	11700	140	140	1	µg/l	ND	ND	ND
	TBA	628000	40	40	10	µg/l	ND	ND	ND
RISKTPH	RISK_TPH_C6_C7_AROM	1090000	7430	669	10	µg/l	ND	ND	ND
	RISK_TPH_C7_C8_AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C8_C10_AROM	9830	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C10_C12_AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C12_C16_AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C16_C21_AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C21_C35_AROM	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C5_C6_ALI	10300	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C6_C8_ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C8_C10_ALI	302	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C10_C12_ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C12_C16_ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C16_C21_ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	RISK_TPH_C21_C35_ALI	>Sat	>Sol	>Sol	10	µg/l	ND	ND	ND
	TPH_STAGE2_HI	1	(blank)	(blank)	10	ratio	0.0984283	0.0046095	0.0984283

XX	Exceeds Human Health & Controlled Waters
XX	Exceeds Human Health Criteria
XX	Exceeds Controlled Waters Criteria

CSM / Assumptions:
Soil 1% SOM (0.58% TOC)
Soil properties for "sand"
Commercial site area 0.5ha
Soil gas ingress rates calculated by model
Infinite groundwater source at 1m.bgl for groundwater GAC
High density residential assume vapour exposure pathways only
CPU scenario modified from modelled commercial scenario by:
Building dimensions (l x w x h): 14m x 6.5m x 2.4m
Differential pressure: 2.6 pascals
Only vapour exposure pathways considered viable
Derived November 2010 using Human7.1 Issue9. MTF.

TABLE 4
GROUNDWATER ELEVATIONS AND QUALITY MEASUREMENTS

Site	Shell Hitchin
Sample Round	ALL
Sample Date	October 2011, February 2012, January 2013, September 2013

Borehole	Screened Section	Depth to base (mb TOC)	Depth to product (mb TOC)	Depth to water (mb TOC)	Borehole elevation (m AOD)	Groundwater elevation (m AOD)	Sample Date	Purge Volume (l)	pH	Temperature (°C)	Conductivity (mS/cm)	ORP (mV)	ORP (mV) Corrected	Dissolved Oxygen (mg/L)	Comments					
BH101	7.5 - 9.0	8.72	-	7.615	70.860	63.245	12/10/2011	3	6.6	15.8	0.99	-105.7	111.3	2.07	Orange, turbid with slight odour and sheen					
								4	6.62	15.9	0.96	-109.4	107.6	1.95						
								5.5	6.6	15	0.92	-107.5	109.5	3.37						
								9	6.59	15.1	0.927	-104.3	112.7	3.63						
		8.75	-	6.969		63.891	27/02/2012	3	6.63	12.61	2.837	83.6	300.6	4.12	Initially orange/turbid turning to clear/colourless. NVO.					
								6	6.64	12.74	2.882	68.0	285	4.11						
								9	6.64	12.78	2.750	69.5	286.5	3.8						
								4	5.86	12.92	1.084	97.2	314.2	6.54						
		8.8	-	6.873		63.987	11/01/2013	8	5.83	12.98	1.089	113.9	330.9	6.73	Clear. NVO.					
								12	5.9	12.98	1.093	119.1	336.1	6.8						
		8.71	-	7.052		63.808	19/12/2012													
		8.75	-	6.874		63.986	29/01/2013													
BH102	7.5 - 9.0	8.04	-	7.320	70.830	63.510	12/10/2011	2	6.51	15.10	0.827	-115.6	101.4	0.89	Orange, turbid with odour. Slow recharge (DUP02)					
								3.5	6.63	15.10	0.809	-125.2	91.8	0.70						
								5.5	6.76	15.10	0.778	-129.4	87.6	0.58						
								6.5	6.77	15.80	0.791	-134.7	82.3	0.58						
		7.93	-	7.061		63.769	27/02/2012	2	6.71	12.43	1.246	-124.6	92.4	0.57	Slightly turbid, clear after 4L. Poor recharge so pumped slowly, mild HC odour when sampling. (DUP01).					
								4	6.85	12.13	1.225	-86.4	130.6	0.37						
								6	6.86	11.98	1.212	-76.8	140.2	0.48						
								3	6.20	12.76	0.719	-175.2	41.8	3.89						
		7.9	-	6.446		64.384	11/01/2013	6	6.68	12.88	0.679	-182.2	34.8	2.78	Grey/brown, turbid.					
								9	6.93	12.91	0.65	-185.6	31.4	3.18						
		7.85	-	6.639		64.191	19/12/2012													
		7.93	-	6.919		63.911	29/01/2013													
		9.04	-	7.095		63.735	04/09/2013	4	7.09	16.06	0.745	-116.0	101	3.96	Orange greyish, turbid					
								8	7.15	16.39	0.738	-135.2	81.8	1.49						
								12	7.14	16.41	0.735	-143.8	73.2	1.03						
								10	6.85	12.25	0.965	35.2	252.2	4.10		50L pumped via hand using Waterra tubing and hand pump, very silty and high volume of sediment removed. 30 L then pumped using Peristaltic, mild turbidity, slightly brown. NVO.				
13.29	-	6.417	64.413	27/02/2012	20	6.83	12.21	0.953	40.6	257.6	5.05	Bailed. Turbid, mild hydrocarbon odour								
					30	6.82	12.25	0.95	43.5	260.5	4.69									
					14	7.04	10.94	0.578	-50.8	166.2	17.25									
					28	7.02	12.09	0.589	-14	203	17.12									
13.27	-	5.94	64.890	19/12/2012																
13.36	-	5.796	65.034	29/01/2013																
6.495	-	13.77	57.060	04/09/2013	8	6.9	14.53	0.640	74.4	291.4	5.25	Orange greyish, slightly turbid, NVO.								
					17	6.79	14.88	0.646	71.5	288.5	5.15									
					25	6.91	14.96	0.646	66.5	283.5	4.93									
					33	6.9	14.9	0.652	62.1	279.1	4.92									
					42	6.9	14.83	0.647	54.5	271.5	5.01									
					2	6.34	14.60	0.581	-20.6	196.4	6.30		Orange colour, very slow recharge. NVO							
5	6.55	14.60	0.581	-24.7	192.3	5.24														
7	6.54	14.60	0.581	-77.1	139.9	5.11														
2.5	6.93	12.32	0.849	43.8	260.8	6.65	Clear. NVO.													
5	6.89	12.35	0.846	45.1	262.1	6.01														
7.5	6.87	12.35	0.848	46.5	263.5	5.47														
3	6.87	12.80	0.643	19.3	236.3	14.56		Clear. NVO.												
6	6.95	12.89	0.637	23.1	240.1	15.23														
9	6.97	12.92	0.629	26.7	243.7	15.67														
63.996	19/12/2012																			
8.36	-	6.616	64.164	29/01/2013																
8.325	-	7.32	63.460	04/09/2013	4	6.63	13.75	0.601	83.2	300.2	7.89	Orange, turbid, NVO								
					5	6.64	13.75	0.588	90.2	307.2	8.04	Light orange, NVO								
					7	6.62	13.75	0.585	91.5	308.5	7.97									
BH105	3.3 - 5.3	5.23	-	5.210	71.030	65.820	12/10/2011	-	-	-	-	-	-	Borehole was reported as dry,						
BH105A	6.5 - 8.5	8.42	-	6.572	71.030	64.458	27/02/2012	3	6.7	12.7	1.173	57.6	274.6	2.67	Clear. NVO.					
								6	6.66	12.74	1.172	55.6	272.6	2.4						
								9	6.66	12.72	1.171	56.5	273.5	2.42						
								5	5.47	12.92	0.768	33.5	250.5	4.3						
		8.43	-	5.873		65.157	11/01/2013	10	5.75	12.93	0.771	41	258	4.36	Clear. NVO.					
								15	6.36	12.94	0.775	47.2	264.2	4.31						
								64.921	19/12/2012											
								65.064	29/01/2013											
6.735	-	8.375	62.655	04/09/2013	4.5	6.77	13.94	0.799	36.4	253.4	3.51	Chalky white, NVO								
					8	6.76	13.88	0.804	37.5	254.5	3.54									
					13	6.78	13.92	0.810	34.5	251.5	3.37									
BH106	3.0 - 5.0	4.66	-	DRY	70.980	DRY	12/10/2011	-	-	-	-	-	-	Borehole was reported with insufficient water to sample.						
BH106A	6.5 - 8.5	8.26	-	6.547	71.050	64.503	27/02/2012	3	6.84	12.8	1.089	54.1	271.1	41.70	Turbid (light brown), becoming clear (colourless). Slightly cloudy while sampling.					
								6	6.84	12.82	1.083	51.8	268.8	40.00						
								9	6.83	12.76	1.085	51.5	268.5	40.70						
								5	6.08	12.79	0.591	17.4	234.4	6.20						
		8.26	-	5.844		65.206	11/01/2013	10	6.43	13.06	0.597	27.2	244.2	6.49	Chalky white, NVO					
								15	6.23	13.09	0.601	30.8	247.8	6.26						
								64.973	19/12/2012											
								65.116	29/01/2013											
		6.718	-	8.252		62.798	04/09/2013	3	7.08	14.55	0.498	10.8	227.8	4.29	White (chalky), NVO					
								6	7.04	14.48	0.608	16.1	233.1	4.23						
10	7.04				14.49			0.605	16.8	233.8	4.05									

Appendix A - Town Planning Approval Notice

NORTH HERTFORDSHIRE DISTRICT COUNCIL

Town and Country Planning Acts

DECISION NOTICE

Correspondence Address:

Mr Lindsay
RLDM Architects Ltd
36 Kingsway Place
Sans Walk
London
EC1R 0LU

Applicant:

Mr Shattock
Shell UK Oil Products Ltd

PARTICULARS OF DEVELOPMENT

Application: 11/02584/1

Proposal: Installation of a new 120,000 litre double skin steel tank farm following replacement of existing tank storage. New above ground offset fill point with associated pipework and tanker fill area. New forecourt canopy with new pump dispensers together with drainage alterations and resurfacing works associated with this type of redevelopment

Location: **Shell Petrol Station, Bedford Road, Hitchin, SG5 2TY**

Approved Plan Nos: location plan; 10019011-PPG21-001; STD-DET-01-SCP-2010; 1350-02; 1350-03; 1350-04; 1350-05;

PARTICULARS OF DECISION

In pursuance of its powers under the above Act and the associated Orders and Regulations, the Council hereby **GRANT PERMISSION** for the development proposed by you in your application received with sufficient particulars on 27/10/2011 subject to the following condition(s):

- 1 The development hereby permitted shall be begun before the expiration of 3 years from the date of this permission.

Reason: To comply with the provisions of Section 91 of the Town and Country Planning Act 1990 as amended by Section 51 of the Planning and Compulsory Purchase Act 2004.

- 2 The development hereby permitted shall be carried out wholly in accordance with the details specified in the application and supporting approved documents and plans listed above.

Reason: To ensure the development is carried out in accordance with details which form the basis of this grant of permission.

- 3 **Prior to the commencement of development approved by this planning permission (or such other date or stage in development as may be agreed in writing with the Local Planning Authority), the following components of a**

scheme to deal with the risks associated with contamination of the site shall each be submitted to and approved, in writing, by the local planning authority:

- 1) A site investigation scheme, to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site;**
- 2) The results of the site investigation and detailed risk assessment referred to in (1) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken;**
- 3) A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (2) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.**

Any changes to these components require the express consent of the local planning authority. The scheme shall be implemented as approved.

Reason: To safeguard human health and the built and natural environment and to protect the quality of inland fresh waters and groundwaters in accordance with Policy P9-6 of our Groundwater Protection: Policy and Practice (GP3) document and the NPPF.

- 4 Prior to the first use / occupation of the development, a verification report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met. It shall also include any plan (a "long-term monitoring and maintenance plan") for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action, as identified in the verification plan, and for the reporting of this to the local planning authority. The long-term monitoring and maintenance plan shall be implemented as approved.

Reason: To safeguard human health and the built and natural environment and to protect the quality of inland fresh waters and groundwaters in accordance with NPPF and our Groundwater Protection: Policy and Practice (GP3) document. Should the recommended investigation identify any soil or groundwater contamination on site that poses an unacceptable level of risk to groundwater and surface water bodies, a verification report demonstrating its satisfactory remediation will be required.

- 5 If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the Local Planning Authority) shall be carried out until the developer has submitted, and obtained written approval from the Local Planning Authority for, a remediation strategy detailing how this unsuspected contamination shall be dealt with. The remediation strategy shall be implemented as approved.

Reason: To safeguard human health and the built and natural environment and to protect the quality of inland fresh waters and groundwater. The nature of soil and groundwater contamination is such that even where comprehensive site investigation is undertaken, some unsuspected contamination may exist between

sample locations. This condition allows a reactive mechanism for the control of the way in which such contamination is treated, should it be discovered.

- 6 Piling or any other foundation designs using penetrative methods shall not be permitted other than with the express written consent of the Local Planning Authority, which may be given for those parts of the site where it has been demonstrated that there is no resultant unacceptable risk to groundwater. The development shall be carried out in accordance with the approved details.

Reason: To protect the quality of inland fresh waters and groundwater. Piling through contaminated ground can result in the pollution of groundwater. Foundation options should be carefully considered and controlled

- 7 The development hereby permitted shall not be commenced until such time as a scheme to install the underground tank(s) has been submitted to, and approved in writing by, the local planning authority. The scheme shall include the full structural details of the installation, including details of: excavation, the tank(s), tank surround, associated pipework and monitoring system. The scheme shall be fully implemented and subsequently maintained, in accordance with the scheme, or any changes as may subsequently be agreed, in writing, by the local planning authority. Reason: To protect the quality of inland fresh waters and groundwater.

- 8 The access to the site from the existing highway shall be constructed in accordance with design and specification as shown on the application drawings (Drg no 1350-02/SCP/2012), and thereafter maintained all to the reasonable satisfaction of the Local Planning Authority.

Reason: In order to ensure the impact of the construction and use of the development hereby approved on the free and safe flow of traffic on the highway network is minimised.

- 9 Best practical means shall be taken at all times to ensure that all vehicles leaving the development site during construction of the development are in a condition such as not emit dust or deposit mud, slurry or other debris on the highway, in particular(but without prejudice to the foregoing) efficient means shall be installed prior to commencement of the development and thereafter maintained and employed at all times during construction of the development of cleaning the wheels of all lorries leaving the site.

Reason: In order to minimise the amount of mud, soil and other materials origination from the site being deposited on the highway, and in the interests of highway safety and visual amenity.

- 10 All areas for parking and storage and delivery of materials associated with the construction of this development shall be provided within the site on land which is not public highway and the use of such areas must not interfere with the use of the public highway.

Reason: In the interests of highway safety.

- 11 During the demolition and construction phase no noisy activities shall take place outside the following hours: Monday to Fridays 08:00-18.00hrs; Saturdays 09:00-13:00 hours and Sundays and Bank Holidays: no work at any time.

Reason: to minimise the potential for noise disturbance to properties in the vicinity during the demolition and construction phase.

Reason for Decision

The works, hereby approved, will not have adverse impact in the locality and are considered to comply with the provisions of Policy 8 of the North Hertfordshire District Local Plan no.2 with Alterations 1996.

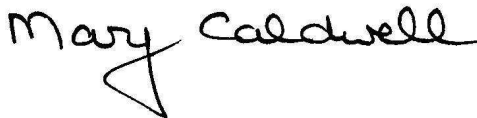
Informative

The Environment Agency recommend that developers should:

- 1) Follow the risk management framework provided in CLR11, Model Procedures for the Management of Land Contamination, when dealing with land affected by contamination.
- 2) Refer to the Environment Agency Guiding Principles for Land Contamination for the type of information required in order to assess risks to controlled waters from the site. The Local Authority can advise on risk to other receptors, e.g. human health.
- 3) Refer to the Environment Agency website at www.environment-agency.gov.uk for more information.

Piling: In accordance with Policy 10-3 of our Groundwater Protection: Policy and Practice (GP3) document we recommend that piling on contaminated sites underlain by aquifers is avoided where possible, and that non-invasive methods, such as rafts, should be used instead. Where there is no alternative to piling, a method should be selected that minimises the risks of groundwater pollution or gas migration. This method should then be presented in a "Foundation Works Risk Assessment Report".

Signed:



Development & Conservation Manager

Development Management
North Hertfordshire District Council
Council Offices
Gernon Road
Letchworth
Herts
SG6 3JF

Date: 29 March 2012

NOTES

- 1 **Failure to satisfy conditions may invalidate this permission and/or result in enforcement action. Particular attention should be paid to the requirements of any condition in bold.**
- 2 Circular 04/2008 (Planning Related Fees) states that where an application is made under Article 21 of the Town and Country Planning (General Development Procedure) Order 1995, a fee will be payable for any consent, agreement or approval required by condition or limitation attached to the grant of planning

permission.

- 3 The fee is £85 per request or £25 where the permission relates to an extension or alteration to a dwellinghouse or other development in the curtilage of the dwellinghouse. No fee is required for applications resulting from a condition removing "permitted development rights".

The request can be informal through the submission of a letter or plans, or formal through the completion of an application form and the submission of plans. Any number of conditions may be included on a single request. The form is available on the Council's website: (http://www.north-herts.gov.uk/index/planning/planning_control_and_conservation/applying_for_planning_permission/application_forms_2.htm).

- 4 If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.

If you want to appeal against your local planning authority's decision then you must do so within 6 months of the date of this notice.

Appeals must be made using a form which you can get from the Planning Inspectorate at Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6PN or online at www.planningportal.gov.uk/pcs.

The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to him that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.

In practice, the Secretary of State does not refuse to consider appeals solely because the local planning authority based their decision on a direction given by him.

5 **Purchase Notices**

If either the local planning authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council (District Council, London Borough Council or Common Council of the City of London) in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

- 6 The District Council and County Highway Authority wish to ensure that, in the implementation of the development, hereby approved, the highway verge adjacent to the property is not damaged or does not become unsightly due to the stationing of skips, parking of vehicles, storing of building materials etc thereon. Your attention is, therefore, drawn to the provisions of Section 131 of the Highways Act 1980 and to

the Hertfordshire County Council Bylaws 1955 (specifically relating to grass margins and verges in Letchworth Garden City) by virtue of which such actions, unless authorised by the prior grant of a licence, constitute a prosecutable offence. Persons responsible for undertaking the development and any associated works are, therefore, strongly encouraged to take appropriate steps to ensure that no breach of the said legislation occurs during the course of such activities. In the event of any damage being caused it will be expected that suitable reinstatement is undertaken upon completion of the development. Failure to do so could also result in legal action being pursued. To obtain information regarding the issue of licences, contact Hertfordshire Highways, Hertfordshire County Council, County Hall, Pegs Lane, Hertford, SG138DQ or telephone 0300 1234 047.

THIS PLANNING PERMISSION DOES NOT CONSTITUTE APPROVAL UNDER BUILDING REGULATIONS AND IS NOT A LISTED BUILDING CONSENT OR CONSERVATION AREA CONSENT. IT DOES NOT CONVEY ANY APPROVAL OR CONSENT WHICH MAY BE REQUIRED UNDER ANY ENACTMENT, BYE-LAW, ORDER OR REGULATION OTHER THAN SECTION 57 OF THE TOWN AND COUNTRY PLANNING ACT 1990.

NORTH HERTFORDSHIRE DISTRICT COUNCIL

Town and Country Planning Acts

DECISION NOTICE

Correspondence Address:

Mr Lindsay
RLDM Architects Ltd
1A Kingsway Place
Sans Walk
London
EC1R 0LS

Applicant:

0Mr Shattock
Shell UK Oil Products Ltd

PARTICULARS OF DEVELOPMENT

Application: 12/02678/1

Proposal: Variation of Condition 4 imposed on application 11/02584/1 granted 29 March 2012 to allow the verification report to be submitted and approved in writing within 3 months following the completion of the site works. Application 11/02584/1 granted permission for the Installation of a new 120,000 litre double skin steel tank farm following replacement of existing tank storage. New above ground offset fill point with associated pipework and tanker fill area. New forecourt canopy with new pump dispensers together with drainage alterations and resurfacing works associated with this type of redevelopment. (Amended description).

Location: **Shell Petrol Station, Bedford Road, Hitchin, SG5 2TY**

Approved Plan Nos: location plan;

PARTICULARS OF DECISION

In pursuance of its powers under the above Act and the associated Orders and Regulations, the Council hereby **GRANT PERMISSION** for the development proposed by you in your application received with sufficient particulars on 27/11/2012 subject to the following condition(s):

- 1 The development hereby permitted shall be begun before the expiration of 3 years from the date of this permission.

Reason: To comply with the provisions of Section 91 of the Town and Country Planning Act 1990 as amended by Section 51 of the Planning and Compulsory Purchase Act 2004.

- 2 The development hereby permitted shall be carried out wholly in accordance with the details specified in the application and supporting approved documents and plans listed above.

Reason: To ensure the development is carried out in accordance with details which form the basis of this grant of permission.

3 **Prior to the commencement of development approved by this planning permission (or such other date or stage in development as may be agreed in writing with the Local Planning Authority), the following components of a scheme to deal with the risks associated with contamination of the site shall each be submitted to and approved, in writing, by the local planning authority:**

1) A site investigation scheme, to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site;

2) The results of the site investigation and detailed risk assessment referred to in (1) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken;

3) A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (2) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

Any changes to these components require the express consent of the local planning authority. The scheme shall be implemented as approved.

Reason: To safeguard human health and the built and natural environment and to protect the quality of inland fresh waters and groundwaters in accordance with Policy P9-6 of our Groundwater Protection: Policy and Practice (GP3) document and the NPPF.

4 Within three months of the completion of the site works, a verification report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met. It shall also include any plan (a "long-term monitoring and maintenance plan") for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action, as identified in the verification plan, and for the reporting of this to the local planning authority. The long-term monitoring and maintenance plan shall be implemented as approved.

Reason: To safeguard human health and the built and natural environment and to protect the quality of inland fresh waters and groundwaters in accordance with NPPF and our Groundwater Protection: Policy and Practice (GP3) document. Should the recommended investigation identify any soil or groundwater contamination on site that poses an unacceptable level of risk to groundwater and surface water bodies, a verification report demonstrating its satisfactory remediation will be required.

5 If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the Local Planning Authority) shall be carried out until the developer has submitted, and obtained written approval from the Local Planning Authority for, a remediation strategy detailing how this unsuspected contamination shall be dealt with. The remediation strategy shall be implemented as approved.

Reason: To safeguard human health and the built and natural environment and to

protect the quality of inland fresh waters and groundwater. The nature of soil and groundwater contamination is such that even where comprehensive site investigation is undertaken, some unsuspected contamination may exist between sample locations. This condition allows a reactive mechanism for the control of the way in which such contamination is treated, should it be discovered.

- 6 The piling and foundation details are to be in accordance with the Toureen Mangan Site Methodology Statement details, as agreed by the Council by letter dated 17th October 2012 unless otherwise agreed in writing.

Reason: To protect the quality of inland fresh waters and groundwater. Piling through contaminated ground can result in the pollution of groundwater. Foundation options should be carefully considered and controlled

- ¹
7 The development hereby permitted shall not be commenced until such time as a scheme to install the underground tank(s) has been submitted to, and approved in writing by, the local planning authority. The scheme shall include the full structural details of the installation, including details of: excavation, the tank(s), tank surround, associated pipework and monitoring system. The scheme shall be fully implemented and subsequently maintained, in accordance with the scheme, or any changes as may subsequently be agreed, in writing, by the local planning authority.

Reason: To protect the quality of inland fresh waters and groundwater.

- 8 The access to the site from the existing highway shall be constructed in accordance with design and specification as shown on the application drawings (Drg no 1350-02/SCP/2012), and thereafter maintained all to the reasonable satisfaction of the Local Planning Authority.

Reason: In order to ensure the impact of the construction and use of the development hereby approved on the free and safe flow of traffic on the highway network is minimised.

- 9 Best practical means shall be taken at all times to ensure that all vehicles leaving the development site during construction of the development are in a condition such as not emit dust or deposit mud, slurry or other debris on the highway, in particular(but without prejudice to the foregoing) efficient means shall be installed prior to commencement of the development and thereafter maintained and employed at all times during construction of the development of cleaning the wheels of all lorries leaving the site.

Reason: In order to minimise the amount of mud, soil and other materials origination from the site being deposited on the highway, and in the interests of highway safety and visual amenity.

- 10 All areas for parking and storage and delivery of materials associated with the construction of this development shall be provided within the site on land which is not public highway and the use of such areas must not interfere with the use of the public highway.

Reason: In the interests of highway safety.

- 11 During the demolition and construction phase no noisy activities shall take place outside the following hours: Monday to Fridays 08:00-18.00hrs; Saturdays 09:00-13:00 hours and Sundays and Bank Holidays: no work at any time.

Reason: to minimise the potential for noise disturbance to properties in the vicinity during the demolition and construction phase.

Reason for Decision

The works, hereby approved, will not have adverse impact in the locality and are considered to comply with the provisions of Policy 8 of the North Hertfordshire District Local Plan no.2 with Alterations 1996.

Informative

The Environment Agency recommend that developers should:

- 1) Follow the risk management framework provided in CLR11, Model Procedures for the Management of Land Contamination, when dealing with land affected by contamination.
- 2) Refer to the Environment Agency Guiding Principles for Land Contamination for the type of information required in order to assess risks to controlled waters from the site. The Local Authority can advise on risk to other receptors, e.g. human health.
- 3) Refer to the Environment Agency website at www.environment-agency.gov.uk for more information.

Piling: In accordance with Policy 10-3 of our Groundwater Protection: Policy and Practice (GP3) document we recommend that piling on contaminated sites underlain by aquifers is avoided where possible, and that non-invasive methods, such as rafts, should be used instead. Where there is no alternative to piling, a method should be selected that minimises the risks of groundwater pollution or gas migration. This method should then be presented in a "Foundation Works Risk Assessment Report".

Proactive Statement

Planning permission has been granted for this proposal. Discussion with the applicant to seek an acceptable solution was not necessary in this instance. The Council has therefore acted proactively in line with the requirements of the Framework (paragraphs 186 and 187) and in accordance with the Town and Country Planning (Development Management Procedure) (England) (Amendment No. 2) Order 2012.

Width80
51

Signed:

Development Management
North Hertfordshire District Council



Council Offices
Gernon Road
Letchworth
par Herts
SG6 3JF

Development & Conservation Manager

Date: 22 January 2013

NOTES

1 **Failure to satisfy conditions may invalidate this permission and/or result in enforcement action. Particular attention should be paid to the requirements of any condition in bold.**

2 Circular 04/2008 (Planning Related Fees) states that where an application is made under Article 21 of the Town and Country Planning (General Development Procedure) Order 1995, a fee will be payable for any consent, agreement or approval required by condition or limitation attached to the grant of planning permission.

3 The fee is £97 per request or £28 where the permission relates to an extension or alteration to a dwellinghouse or other development in the curtilage of the dwellinghouse. No fee is required for applications resulting from a condition removing "permitted development rights".

The request can be informal through the submission of a letter or plans, or formal through the completion of an application form and the submission of plans. Any number of conditions may be included on a single request. The form is available on the Council's website: (http://www.north-herts.gov.uk/index/planning/planning_control_and_conservation/applying_for_planning_permission/application_forms_2.htm).

wWi If you are aggrieved by the decision of your local planning authority to refuse
dth5 permission for the proposed development or to grant it subject to conditions, then
954 you can appeal to the Secretary of State under section 78 of the Town and Country
Planning Act 1990.

If you want to appeal against your local planning authority's decision then you must do so within 6 months of the date of this notice.

Appeals must be made using a form which you can get from the Planning Inspectorate at Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6PN or online at www.planningportal.gov.uk/pcs.

The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to him that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.

In practice, the Secretary of State does not refuse to consider appeals solely because the local planning authority based their decision on a direction given by him.

5 **Purchase Notices**

If either the local planning authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council (District Council, London Borough Council or Common Council of the City of London) in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

- 6 The District Council and County Highway Authority wish to ensure that, in the implementation of the development, hereby approved, the highway verge adjacent to the property is not damaged or does not become unsightly due to the stationing of skips, parking of vehicles, storing of building materials etc thereon. Your attention is, therefore, drawn to the provisions of Section 131 of the Highways Act 1980 and to the Hertfordshire County Council Bylaws 1955 (specifically relating to grass margins and verges in Letchworth Garden City) by virtue of which such actions, unless authorised by the prior grant of a licence, constitute a prosecutable offence. Persons responsible for undertaking the development and any associated works are, therefore, strongly encouraged to take appropriate steps to ensure that no breach of the said legislation occurs during the course of such activities. In the event of any damage being caused it will be expected that suitable reinstatement is undertaken upon completion of the development. Failure to do so could also result in legal action being pursued. To obtain information regarding the issue of licences, contact Hertfordshire Highways, Hertfordshire County Council, County Hall, Pegs Lane, Hertford, SG138DQ or telephone 0300 1234 047.

THIS PLANNING PERMISSION DOES NOT CONSTITUTE APPROVAL UNDER BUILDING REGULATIONS AND IS NOT A LISTED BUILDING CONSENT OR CONSERVATION AREA CONSENT. IT DOES NOT CONVEY ANY APPROVAL OR CONSENT WHICH MAY BE REQUIRED UNDER ANY ENACTMENT, BYE-LAW, ORDER OR REGULATION OTHER THAN SECTION 57 OF THE TOWN AND COUNTRY PLANNING ACT 1990.

Appendix B - Photographs



PHOTOGRAPHIC LOG

Client Name:
Shell UK Oil Products

Site Location: Shell Hitchin

Project No.
46370079

Photo No.
1

Date:
March 2013

Description:

**Decommissioning of
BH102**

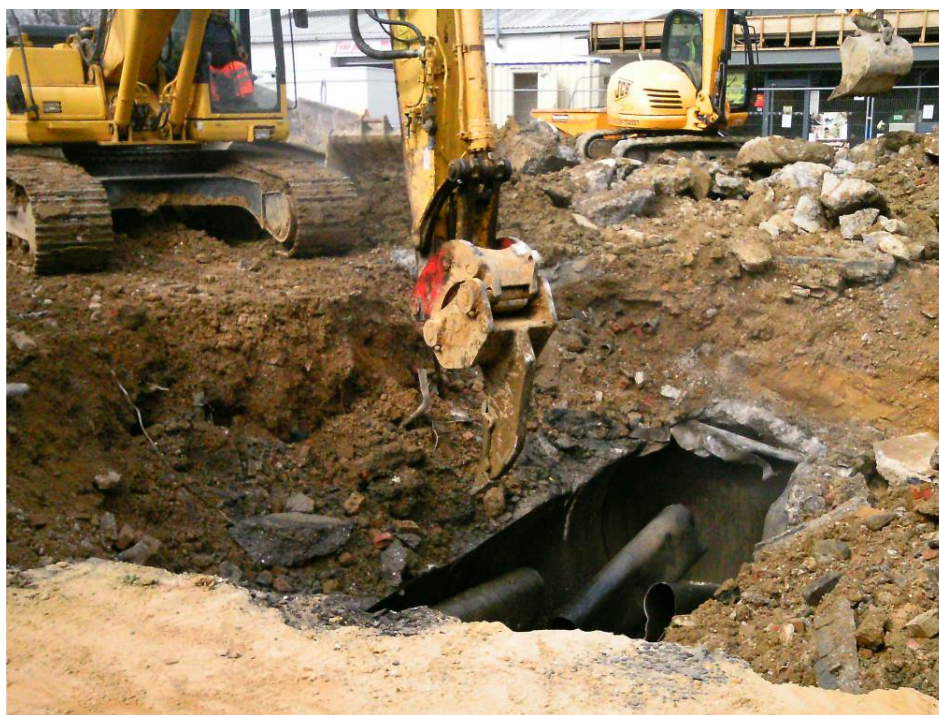


Photo No.
2

Date:
April 2013

Description:

**EXA: Excavation of
Tank 4**





PHOTOGRAPHIC LOG

Client Name: Shell UK Oil Products	Site Location: Shell Hitchin	Project No. 46370079
--	-------------------------------------	--------------------------------

Photo No. 3	Date: April 2013
Description: EXA: Removing Tanks 3 and 6	

A photograph showing a large, dark, rusted metal tank or pipe section lying on the ground. The tank is heavily corroded and has a jagged, broken edge. It is surrounded by a pile of rocks and dirt. A black hose or cable is visible running across the ground near the tank. In the background, a small orange excavator is partially visible. The ground is uneven and covered with loose soil and rocks.

Photo No. 4	Date: April 2013	
Description: EXA: Black staining beneath the base of the tank farm at 4.5m bgl.		