APPENDIX 9.2

RH/12032/let18

1st April 2014

Greenhill Construction Limited
Esperanto Way
Newport
NP19 0RD

For the attn. of Mr Stuart Jones

Dear Stuart

ADDITIONAL GROUNDWATER MONITORING: HERBERT ROAD NEWPORT

I confirm that we have completed the additional groundwater sampling and testing requested at the above site.

On two occasions all six deep groundwater wells were sampled.

Borehole Summary			
Borehole	**Depth of Borehole (m)**	**Depth to Groundwater (m)**	
		06.03.2014	**19.03.2014**
BH1	10.6	0.71	0.9
BH2	12.9	1.0	0.76
BH3	9.7	6.35	6.49
BH4	10.2	2.14	2.07
BH5	8.0	3.0	3.16
BH6	10.3	0.4	0.7

Each borehole was purged prior to sampling. This was undertaken using a battery operated pump. The volume of perched groundwater purged was calculated by:

Volume = (3 x cross sectional area of borehole, including gravel) x depth of groundwater Purged

The groundwater samples were submitted to the laboratories of Derwentside Environmental Testing Services Limited. The test certificates are appended.

In the following tables results have been compared to thresholds provided by the Water Framework Directive (for Inland Surface Waters - Annual Average) and in their absence the Drinking Water Directive.

Summary of Groundwater Chemical Test Results
Standard Suite and Phenols

Substance	Threshold (mg/l)	Source	Measured Concentrations of Tested Substances (mg/l)				Number of exceedences
			Round 1		Round 2		
			Min	Max	Min	Max	
Arsenic	0.05	WFD	0.00042	0.0048	0.00044	0.0068	0
Cadmium	0.00025*	WFD	<0.00003	0.00004	<0.00003	<0.00003	0
Chromium	0.0091**	WFD	0.00029	0.00078	<0.00025	0.0022	0
Copper	0.028*	WFD	<0.0004	0.0014	<0.0004	0.0013	0
Lead	0.0072	WFD	0.00013	0.00021	<0.00009	0.00019	0
Mercury	0.0005	WFD	<0.00001	<0.00001	<0.00001	0.00001	0
Nickel	0.02	WFD	<0.0005	0.0042	<0.0005	0.0058	0
Selenium	0.01	DWD	<0.00025	0.0019	<0.00025	0.00092	0
Zinc	0.125*	WFD	0.0259	0.160	0.00311	0.122	**1**
Cyanide	0.001	WFD	<0.04	<0.04	<0.04	<0.04	BLDL
Sulphate	250	BRE	6.6	68	2.9	70	0
pH	-	-	7.0	7.4	7.1	7.4	-
Sulphide	-	-	<0.01	0.011	<0.01	<0.01	-
BOD	-	-	<1.0	10	<1.0	3.3	-
COD	-	-	<10	670	<10	330	-
Hardness	-	-	285	614	268	625	-
Total Phenol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
4-chloro-3-methylphenol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
2,4-dichlorophenol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
2,4 – dimethylphenol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
p-cresol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
2,6-dimethylphenol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
2,6-dichlorophenol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
2,4,6-trichlorophenol	0.0077	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0

Notes:

- * Guideline dependent on hardness of >200mg $CaCo_3$/l
- ** Addition of guideline for Chromium III and Chromium VI
- - No guideline available
- BLDL - Below Laboratory Detection Limit

Summary of Groundwater Chemical Test Results
Speciated PAH and Petroleum Hydrocarbons

Substance	Threshold (mg/l)	Source	Measured Concentrations of Tested Substances (mg/l)				Number of exceedences
			Round 1		Round 2		
			Min	Max	Min	Max	
Acenapthene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
Acenaphthylene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
Anthracene	0.0001	WFD	<0.00001	<0.00001	<0.00001	<0.00001	0
Benzo(a)anthracene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
Benzo(a)pyrene	0.00005	WFD	<0.00001	<0.00001	<0.00001	<0.00001	0
Benzo(b)fluoranthene	0.00003	WFD	<0.00001	<0.00001	<0.00001	<0.00001	0
Benzo(k)fluoranthene	0.00003	WFD	<0.00001	<0.00001	<0.00001	<0.00001	0
Benzo(ghi)perylene	0.000002	WFD	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
Chrysene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
Dibenzo(ah)anthracene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
Fluoranthene	0.0001	WFD	<0.00001	0.00001	<0.00001	<0.00001	0
Fluorene	-	-	<0.00001	0.00002	<0.00001	<0.00001	BLDL
Indeno(123cd)pyrene	0.00002	WFD	<0.00001	<0.00001	<0.00001	<0.00001	0
Naphthalene	0.0024	WFD	<0.00001	<0.00001	<0.00001	<0.00001	0
Phenanthrene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
Pyrene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	BLDL
PH- Aliphatic							
>C5-C6	-	-	<0.0001	<0.0001	<0.0001	<0.0001	BLDL
>C6-C8	-	-	<0.0001	<0.0001	<0.0001	<0.0001	BLDL
>C8-C10	-	-	<0.0001	<0.0001	<0.0001	<0.0001	BLDL
>C10-C12	-	-	<0.001	<0.001	<0.001	<0.001	BLDL
>C12-C16	-	-	<0.001	<0.001	<0.001	<0.001	BLDL
>C16-C21	-	-	<0.001	<0.001	<0.001	<0.001	BLDL
>C21-C35	-	-	<0.001	<0.001	<0.001	<0.001	BLDL
PH- Aromatic							
>C5-C7 (benzene)	0.01	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
>C7-C8 (toluene)	0.05	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
>C8-C10 (xylenes)	0.03	WFD	<0.0001	<0.0001	<0.0001	<0.0001	0
>C10-C12	-	-	<0.001	<0.001	<0.001	<0.001	BLDL
>C12-C16	-	-	<0.001	<0.001	<0.001	<0.001	BLDL
>C16-C21	-	-	<0.001	<0.001	<0.001	<0.001	BLDL
>C21-C35	-	-	<0.001	<0.001	<0.001	<0.001	BLDL

Notes

- - No guideline available. BLDL - Below Laboratory Detection Limit

All substances were found to be present at concentrations below their respective threshold level with the exception of zinc on one occasion.

Zinc was recorded at a concentration of 0.16mg/l in BH5 during the first sampling round, exceeding the guideline of 0.125mg/l.

This exceedence is marginal and was not noted during the second monitoring round. It should also be noted that elevated zinc was not found during previous groundwater monitoring carried out by Terra Firma. Indeed, no groundwater contamination was previously identified other than that attributed to oil spilt during the drilling process (picked up only on the initial groundwater monitoring round in January 2013).

Terra Firma previously reported that the groundwater beneath the site does not have hydrological continuity with the River Usk.

It is therefore concluded that the occurrence of zinc does not present a concern with regards to an impact on the aquatic environment.

I trust that the above is to your satisfaction, however, if you have any queries or require any further information please do not hesitate to contact me.

Yours sincerely
for: Terra Firma (Wales) Ltd

Mrs Ruth Howells