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Young  
Green

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05 FEB 2006

## PLANNING SUPPORT STATEMENT

Site  
PROPOSED SCHOOL AND RESIDENTIAL  
DEVELOPMENT, LAND AT  
GLEBELANDS, NEWPORT  
(APPLICATION NO 00/0768)

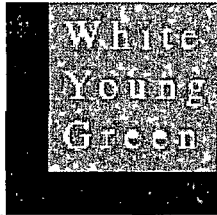
Client  
NORWEST HOLST CONSTRUCTION LTD

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construction



# LAND CONTAMINATION PLANNING SUPPORT STATEMENT

Site  
PROPOSED SCHOOL AND RESIDENTIAL  
DEVELOPMENT, LAND AT  
GLEBELANDS, NEWPORT  
(APPLICATION NO 00/0768)  
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## ENVIRONMENTAL CONSULTANCY

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## **1 0 INTRODUCTION**

### **1 1 Report scope**

This overview document provides a precis of the remediation strategy, its rationale and aims and its main components. It is designed as a summary document to introduce the reader to the scheme, and the works that have been focussed to discharge Conditions 5 and 6 of the planning permission in place for the development. It is not intended to provide every detail of the remediation strategy here, the supporting documents in the Appendices should be consulted for detailed information, assessment and clarification.

### **1 2 Site description**

The site is located between the Hereford to Newport railway line and the eastern bank of the River Usk approximately 200m south of the M4 motorway and 1km north of Newport city centre. The site occupies approximately 8.1 hectares, is roughly rectangular in shape and is centred at the approximate Ordnance Survey Grid Reference of 331750 189550.

The site is split into two distinct areas, separated by the drainage ditch known as Lotery's Reen. The northern part of the site (north of the reen) is currently used for recreation and comprises an all-weather running track, clay surface sports pitch, club house and changing rooms. The southern part of the site (south of the reen) is currently disused land and comprises a generally level area of wild grasses, scrub and young trees. The northern area of the site is approximately 2m higher than the southern area, at an approximate level of 9.0 to 9.5m AOD to the southern area's levels of typically 7.0m to 7.5m OD.

### **1 3 Proposed development**

The proposed development layout is provided in Figure 101. It comprises housing to the south, and a school and associated playing fields to the north. The boundary between these two land-uses is proposed to be further north than the current alignment of the reen, and the reen itself is to be relocated further north reflecting this revised boundary. It is understood that the reen is to be culverted.

## 2 0 SUPPORTING INFORMATION

### 2 1 Appended supporting information

The following list summarises the documents published on the ground investigations and assessments undertaken on the site by WYGE to date. These are listed in chronological order, and are included within Appendices A to H of this document.

#### 2 1 1 *Ground conditions desk study assessment (WYGE reference E3803/PG/AUG03/GCIAV2) August 2003*

This document summarises all the ground conditions focussed work undertaken previously on the site by third parties. This previous work includes a report by Exploration Associates written in 2000, the results of which have been used to inform later assessment and discussion of contamination on the site (Section 2 1 4). The desk study also provides a thorough desk based assessment of the site, including site history, geology, hydrogeology, hydrology and other issues.

#### 2 1 2 *Report on a ground investigation at Durham Road, Newport Factual SI report from Norwest Holst Soil Engineering Three volumes October 2003*

This document provides a factual account of the largest phase of intrusive investigation undertaken on the site, by Norwest Holst, under the supervision of WYGE. This investigation included advancement of boreholes, excavation of trial pits and geophysical surveying.

#### 2 1 3 *Site investigation interpretative report (WYGE reference E3808/CBP/GIR/OCT2003/V1) October 2003*

An interpretative assessment of the first phase of investigation, this report includes Tier 1 assessment of contamination across the whole site and provides an outline assessment of geotechnical issues.

#### 2 1 4 *Quantitative risk assessment of ground conditions recorded during the 2000 & 2003 site investigations (WYGE reference E03808/JV/SP/Oct03/QRA/V1) October 2003*

This document builds upon the more generic assessment of contamination in the previous report, and includes a site specific quantitative risk assessment (QRA) of potential risks to both site end-users and the wider environment from contamination on site.

#### 2 1 5 *Site investigation factual report V1 (WYGE reference E3808/AE/CBP/SIFactualRep/Jan05/V1) April 2005*

Following the conclusions of the site specific QRA, it was recommended that further investigation be undertaken to assess potential poly-chlorinated biphenyls (PCB) contamination in the northern area of the site. This comprised trial pitting targeted by the use of several geophysical survey techniques. Additional investigation was also required to help assess geotechnical issues, and was facilitated by the advancement of boreholes. This report provides a factual summary of this additional investigation.

- 2 1 6 *Interpretative geotechnical report V1 (WYGE reference E3808/MC/IntGeo/Feb05/V1) April 2005*

This report uses the results of the two investigations undertaken to provide recommended geotechnical solutions for the development of the site, especially with regards to the raising of land levels in the southern area

- 2 1 7 *Planning support – Enhanced ground contamination risk assessment and remediation strategy V1 (WYGE reference E3808/GO/PSS-RemStrat/MAY05/V1) May 2005*

This document builds upon the risk assessment undertaken in October 2003 in light of the additional ground investigation. It provides a QRA assessment of the PCB contamination in the southern portion of the northern area of the site. It also provides details of the remediation strategy outlined for the site with regards to ground contamination and potential risk to future site end-users and the wider environment.

- 2 1 8 *Planning support – Land gas monitoring and risk assessment report V1 (WYGE reference E3808/JC/LANDGAS/PLANNINGSUPPORT/ MAY05/V1) May 2005*

Using the findings of the previous investigations on the site, including land gas monitoring over a period of three months, this document provides details of the remediation strategy for the site with respect to land gas issues.

### **3 0 RISK ASSESSMENT AND RISK MANAGEMENT**

The Environment Act 1995 (Section 57) makes provisions for a risk based framework for the identification, assessment, management and redevelopment of contaminated land within the UK. The provisions of the Act came into effect in Wales in July 2001 and are aimed at ensuring that actions taken with respect to contaminated land are directed by a technically well founded assessment of risk.

The process of risk assessment is an evaluation of the probability of harm, and comprises the identification of sources of contamination (toxic substances), receptors that may be affected by the contamination and pathways by which the receptors may be harmed.

Such a risk assessment has been undertaken for both soil contamination (Appendix G) and land-gas (Appendix H). The following paragraphs summarise those issues assessed in these documents to require mitigation due to the potential risks posed by contamination on the site.

#### **3 1 Protection of receptors from PCB contamination**

An area of the land immediately to the north of Lotery's Reen has been assessed to contain a number of corroded metal drums and associated localised poly-chlorinated biphenyl (PCB) contamination (Figure 102). The location of these drums is detailed on Figure 103. The risk assessment published in May 2005 (Appendix G) has derived appropriate site specific target levels (SSTLs) for PCBs on the site designed to protect the River Usk as the critical receptor. Concentrations of PCBs in the immediate vicinity of these corroded drums are in excess of these SSTLs, hence necessitating remediation to protect the River Usk.

Due to the environmental immobility of PCBs, the risk to human health from this material is not considered significant, either under the current land-use, or in the proposed residential with gardens land-use. The drums and associated PCB materials are buried at least 1m below ground level. Current UK contaminated land guidance (the Contaminated Land Regime, CLR) states that only soils within the upper metre of the ground surface should be considered when assessing potential risk to human health. Under CLR methodology, the drums and associated PCB material are determined to be too deep to pose significant risk to the site users.

Notwithstanding the above, it is recognised that there is significant regulatory and public concern over the presence of PCB material under the site. To alleviate such concerns, and to protect the River Usk, the remediation strategy includes for the targeted remediation of these corroded drums and associated PCB material.

#### **3 2 Protection of human health receptors from general made ground contamination**

General made ground across the northern area of the site has been assessed to include several contaminants of potential concern to human health under the proposed end-use of a school with playing fields (Appendices D and G). There is therefore a requirement for remediation across that area to be developed as a school (Figure 102).

The general made ground across this northern area has been assessed to not pose significant risk to controlled waters (Appendices D and G) Remediation of this area is therefore focussed on protecting human health only by site capping

### 3 3 Flood protection

The southern area of the site (extending south from the northern bank of Lotery's Reen – Figure 101) needs to be raised in order to attain the minimum required land level for flood protection Material will therefore need to be imported to facilitate this The Environment Agency are being consulted in relation to flood protection issues outside of the scope of this document and appended work

### 3 4 Geotechnical enabling works

Due to the presence of peat and soft clay beneath the southern area of the site, the addition of large volumes of soil for flood protection will cause settlement of the ground Geotechnical enabling works are required to control these future settlements To this end it is proposed that the area is drained (via band drains, which are inserted vertically into the ground to provide a pathway for the movement of water) and subjected to controlled rapid settlement (pre-consolidation) prior to construction commencing (Appendix F)

### 3 5 Aquifer protection

In their current state the made ground soils in the southern area of the site are not considered to pose a risk to the underlying sandstone minor aquifer However, it is important that future movements of water are controlled in the context of the current status quo of a brown-field site Currently, shallow groundwater is sitting on the underlying impermeable alluvium, and so is separated from the sandstone minor aquifer beneath (Appendix C and D) Installation of band drains to facilitate pre-consolidation will puncture this impermeable alluvium barrier removing the natural protection and potentially allowing direct and long term infiltration to the aquifer (Appendix F) It is therefore necessary to re-instate an impermeable layer as part of the remediation strategy, to maintain this aquifer protection (Appendix G)

### 3 6 Control of land gas

Land gas monitoring to date has indicated that there is a significant, but finite, source of gas beneath the site (Appendix H) The predominant source is the peat bodies that lie within the alluvium beneath the site, although some additional source potential is anticipated within the made ground across the entire site Due to the squashing of the peat bodies, source generation is anticipated to temporarily increase during pre-consolidation and then lessen significantly following the land-raise activities In order to protect the residential and school buildings from land gas, some mitigation measures will be required in both the northern and southern areas (Appendix H)

As part of the land gas protection works, in-tact boreholes from the previous investigations are to be decommissioned (grouted up), so removing any uncontrolled preferential vertical pathways for gas migration

**3 7 Foundation design**

Due to the contaminated nature of made ground across the entire site, foundation design will include a risk assessment with respect to contaminant pathways being introduced between the made ground and minor aquifer

**3 8 Asbestos – protection of construction workers**

Asbestos has been identified locally within the made ground beneath the site, both in bound cement and fibrous form. These occurrences, especially of fibrous material, are relatively limited. However, the potential presence of asbestos will require consideration and management throughout the construction works and as part of the development design (as discussed in Appendix G). Although not considered a risk to site end-users, construction workers will need to be protected from potential exposure.

## 4 0 REMEDIATION STRATEGY – KEY ELEMENTS

### 4 1 Installation of monitoring equipment

In order to facilitate the effective monitoring and control of the remediation works, the first task to be completed on site is to install a suitable array of groundwater and land-gas monitoring positions. Figure 104 details the proposed locations of positions for groundwater, surface water and air monitoring.

Key groundwater monitoring positions will be double installations (via adjacent but separate boreholes). In these locations one of the installations is to be screened within the minor aquifer, whilst the other is to be installed within the shallower alluvium. This will enable monitoring of both the deep and shallow (perched) groundwater. In less sensitive locations, a single installation is to be screened through the alluvium only (Figure 104).

### 4 2 PCB area soil remediation

The area to be remediated for PCB materials is indicated in Figure 103. Within this area, the PCB contamination is closely associated with corroded metal drums. All those locations where drums and/ or significant PCB contamination have been identified (i.e. at concentrations above SSTL) are highlighted on Figure 103.

In each location where a drum or PCB anomaly has been identified, the area is to be excavated, and material identified as visually contaminated to be placed in a separate controlled stockpile to the rest of the material. The area is then to be geophysically surveyed in order to identify any additional drum anomalies not previously identified. Should further metallic features be identified these will be excavated, with material visually identified as contaminated placed in a separate stockpile to the rest of the material.

The excavation around each individual drum/ anomaly excavation will be validated by means of analysing material from the sides and base of the excavation for the presence of PCBs. Validation will be undertaken by taking a composite sample from each face and base of each excavation, or for every 15m<sup>2</sup> (whichever is the smaller) as detailed in Appendix G. These samples will then be analysed for PCBs, and the results screened against remedial target values (RTVs, see Appendix G). Where the sample results exceed the RTVs, the excavation is to be extended, and re-validated. This is to be an reactive and iterative process until all excavation limits display values beneath the RTVs.

That material visually identified as contaminated is to be treated as hazardous waste and disposed of accordingly. The rest of the excavated material is to be safely stored and chemically tested, at a pre-determined frequency (every 100m<sup>3</sup>), to ascertain its suitability for re-use. Any material exceeding the RTVs is to be treated as hazardous waste until assessed for waste disposal and disposed of accordingly. That material not exceeding the RTVs is to be stockpiled on site awaiting re-use.

Environmental controls will be in place throughout these works. The detailed design of these is to be provided by the Contractor as part of their Method Statements for the works, but they are to include as a minimum

- Boundary dust monitoring
- Set-up of clean and dirty areas
- Decontamination unit
- Wheel wash
- Detailed vehicle audit, including waste transfer notes and banksman
- Detailed record of material movement and stockpile management on site
- Control of leachate from stockpiles and control of groundwater pumped from excavations (including chemical testing, storage and relevant discharge consents)
- Real-time asbestos air monitoring

An indicative site layout providing some of these features is provided in Figure 104 as an example

#### **4 3 Capping of northern area**

In order to protect the future site users from the general made ground across the northern area of the site (as identified in Figure 102), it is proposed to place a granular cap across the gardens, soft landscaping and playing fields in the northern area (including the area of PCB contamination)

This cap is to be placed to a thickness of 600mm, in line with the guidance given by the BRE document BR465 (as outlined in Appendix G) The base of this cap is to be marked by the placement of a visual geotextile barrier in garden areas This will act as an additional contaminant barrier, but will primarily serve as a warning to any future site residents that contaminated made ground is to be found beneath it

The cap is to be extended to greater depths where service runs are to be placed, in order that all services lie within a bed of uncontaminated material It may also need to be thicker in areas requiring landscaping, dependant upon the landscape architecture

The placement of such a thickness of material upon the current site levels will require a tapered edge detail This will be designed such that the future site users are equally protected at the edge of the site as in the centre The final edge detail will be outlined in the Contractor's Method Statements

Material imported for capping purposes will be examined and tested at source at a frequency of every 500m<sup>3</sup> for chemical and geotechnical suitability prior to import

#### **4 4 Placement of geotechnical enabling works in southern area**

The southern area needs to be raised in order to provide minimum flood protection levels The additional pressure exerted by this added weight of material will cause consolidation and settlement of the underlying soft peat and clays In order to control this, it is necessary to enable controlled and rapid settlement at the start of the site works This will be done by enabling the clay and peat to drain rapidly as water is squeezed out This is facilitated by the installation of vertical drains, extended through the alluvium strata As the additional weight of the imported soil used for raising the land acts on the alluvial strata, the water within them will be squeezed out via these vertical drains A gravel blanket will be placed across the current site surface to

connect the vertical drains and allow collection of the arising water. The arising water will be chemically tested before being discharged either to sewer or to the River Usk, dependant on chemical test results and relevant licences/permissions.

The final design and full details of the band drains and drainage blanket will be provided within the Contractor's Method Statements for this element of the work. However, a schematic detailing the general principles behind the design (which are discussed in length in Appendix F) is provided in Figure 106 for information.

All material imported to facilitate raising of the land levels in the southern area is to be examined and tested at source for chemical and geotechnical suitability at a frequency of one test per 500m<sup>3</sup> prior to import.

#### **4.5 Placement of clay in southern area**

A clay layer is to be incorporated into the material imported for raising the land in the southern area. This is to be 650mm thick, placed directly above the gravel drainage layer (Section 4.4) and is to serve the following two purposes:

- Provision of a replacement layer of clay between the ground surface and the sandstone minor aquifer at depth. This layer will re-instate the vertical limit to groundwater flow previously in place prior to the advancement of vertical drains through the system.
- Provision of in-ground gas protection across the entire southern area. Any gas arising from the underlying peat will be channelled via the band drains into a controlled venting system to enable effective gas venting at the edges of the area (via the underlying gravel drainage layer outlined in Section 4.4). This affords land-gas protection to the residential houses that are to be built in this area. The requirement for in-house gas protection will be lessened by the presence of this clay, with the final in-house protection requirements to be specified following a period of gas monitoring after geotechnical enabling works in this area are complete.

This clay layer is to be extended up the northern bank of the current reën in order that a division is made between the made ground on the northern side of the reën and that on the south, so maintaining the hydraulic separation currently provided by the reën itself. The final details of this are to be provided within the Contractor's Method Statement for this element of the work, but a schematic drawing is provided for this and other edge details in Figure 105.

The interaction of the clay layer and the underlying drainage blanket and vertical band drains is illustrated schematically in Figure 106, although the final details are again dependant upon the Contractor's Method Statement.

Clay imported for this purpose is to be examined and tested at source for geotechnical (including permeability) and chemical suitability at a frequency of one test per 500m<sup>3</sup> prior to import.

#### **4.6 Groundwater and land gas control**

During the pre-consolidation of the southern area of the site, volumes of groundwater and land gas will be squeezed out of the alluvial clay and peat.

strata This will be controlled by the installation of a drainage blanket pipes and boreholes The exact arrangement of these features will be dependant upon Contractor Method Statements, but will include as a minimum,

- means of collecting the arising groundwater, with a storage capacity sufficient to store water whilst chemical analysis is undertaken to determine discharge criteria,
- venting of the drainage blanket to the atmosphere along the site boundaries (schematic edge details facilitating this are given in Figure 105 as an example for reference),
- monitoring boreholes along the boundaries of the area to measure gas concentrations and flows (as detailed in Section 4.7.3 and Figure 104)

#### **4.7 Land-gas protection**

In order to protect buildings on site, the following three elements are to be incorporated into the development

##### School building

In order to provide gas protection to the school building, a 'two element' (membrane and vented void) level of protection would be required in the form of a reinforced cast in-situ ground floor slab, all joints and service penetrations sealed, gas resistant membrane sealed to the damp proof course and a vented under floor sub space This is considered sufficient to satisfy statutory requirements under current land-gas guidance (BRE 212)

Due to the sensitive nature of the school building, a further element of land-gas protection is to be incorporated in the form of a positive pressure clean-air blanket (CAB) system as an additional mitigation measure for the school building This technology consists of keeping the under-floor void at slightly above atmospheric pressure by mechanical means, and as such suppress any upward migration of gases

##### Housing in the northern area

In those houses in the northern area, a 'two element' (membrane and vented void) level of protection is required in the form of a reinforced cast in-situ ground floor slab, all joints and service penetrations sealed, gas resistant membrane sealed to the damp proof course and a vented under floor sub space This is considered sufficient to satisfy statutory requirements under current land-gas guidance (BRE 212)

Due to the problems in maintaining mechanical systems in domestic properties, the CAB system is not to be extended to these properties Instead, the under-floor void is to be passively vented This is a standard arrangement used to mitigate land gas on a wide range of sites across the UK

In order to reinforce the assessment of the land-gas regime in this area, monitoring shall be undertaken once PCB remediation is complete, prior to the commencement of house-building

##### Housing in the southern area

The southern area differs from the northern in that the current land-gas regime is to be altered considerably during development by, the introduction

of vertical conduits to groundwater and therefore land-gas, by the squashing of the peat under the site during consolidation and, by the installation of a clay layer across the whole site

It is anticipated that land-gas generation will increase in the short term during consolidation, but that the source will soon be exhausted. This, coupled with the placement of clay across the whole area, is anticipated to lessen gas generation significantly in the long term

Following completion of the consolidation exercise, land-gas concentrations in the southern area are to be monitored prior to commencement of housing construction in order that the new gas regime can be assessed, and any land-gas protection measures required in the houses determined in accordance with BRE 212

## **4 8 Monitoring**

### **4 8 1 Groundwater**

The locations of groundwater monitoring installations are indicated on Figure 104. One round of groundwater monitoring is to be undertaken prior to construction work commencing

During remediation of the PCB area groundwater monitoring will be weekly and during geotechnical enabling works groundwater monitoring is to be undertaken monthly

Due to the respective programme of works, post-completion monitoring following PCB area remediation will be covered by the monitoring required during the adjacent geotechnical enabling works in the southern area

On each monitoring visit, each installation will be purged, and samples submitted to chemical laboratory for analysis of a standard suite of contaminants. The results of these analyses will inform the validation of works, as outlined in Section 4 8, and will inform of any effect that the works are having on the groundwater

### **4 8 2 Air monitoring**

During remediation works, air monitoring will be undertaken at weekly intervals in the locations indicated on Figure 104. This will consist of boundary monitoring of dust and asbestos, with the results informing the validation of the works and any requirements for reactive on-site management

### **4 8 3 Land gas monitoring**

The locations of land gas monitoring installations are indicated on Figure 104. During the geotechnical enabling works in the southern area, monitoring of land gas is to be undertaken daily at these locations

Following completion of the geotechnical enabling works, land gas is to be monitored weekly for a period of three months

Each monitoring visit is to consist of on-site measurement of carbon dioxide, carbon monoxide, methane, oxygen, hydrogen sulphide, atmospheric pressure and flow as a minimum. These results will provide information on the changing gas regime such that any impact the works have on the gas regime can be assessed. They will also provide data for the validation report (Section 4.8)

#### 4.8.4 Asbestos

During all excavation activities, the air will be monitored using real-time techniques for asbestos fibre. If any fibres are detected in the air a management plan will be in place to control risks to construction workers and the wider environment.

#### 4.9 Validation

All elements of the remediation works are to be monitored by WYGE. This monitoring will culminate in the production of a Validation Report for the works. This will provide all the relevant monitoring, validation sampling and order of works information to provide a robust record of the remediation works undertaken. This validation report has the ultimate aim of discharging Condition 7 of the planning permission for development.

## 5 0 STATUTORY CONSULTATIONS UNDERTAKEN TO DATE

### 5 1 Environment Agency Wales

The Environment Agency Wales (EA) is the relevant statutory consultee on behalf of the local planning authority for matters concerning risk to controlled waters. As such, they are the consultees with regards to Condition 5. They have therefore been consulted with regards to the investigation and assessment of the site in the context of controlled waters and the wider environment. All correspondence discussed below is included in Appendix G of this report.

The Interpretative Report and QRA (both dated October 2003) were issued to the EA. They raised a number of queries in a letter dated 6th April 2004. As a result, an e-mail addressing each query in turn was sent by WYGE on 30th April 2004.

Following this exchange, the EA confirmed their acceptance of WYGE's assessment that the site posed no significant risk to the River Usk or groundwater beneath the site in a letter dated 6th May 2004. This acceptance was subject to

- the EA being consulted should the proposals regarding the re-en be altered
- the remediation strategy (i.e. this document) being submitted to the local planning authority for consultation and agreement with the EA prior to any work being undertaken
- a Foundation Works Assessment Report being submitted to the local planning authority for consultation with the EA prior to works commencing

The alteration of the course of the re-en is currently under consultation with the Environment Agency. This document provides the requested remediation strategy. A Foundation Works Assessment will be completed and submitted to the Environment Agency once foundation designs have been finalised.

The EA have therefore accepted WYGE work to discharge Condition 5, with the proviso of the above three points.

The above consultations pre-date the additional investigation of the area of PCB contamination (Appendix E). Subsequent to the results of this being available, two further meetings have been convened with the EA on 24th June 2005 and 16th November 2005. These meetings were used as opportunities to discuss the issue of PCB contamination, and to provide the EA with further details of the evolving remediation strategy. The EA were in general agreement in both meetings that the strategy met their requirements, and their comments have been incorporated into this document.

### 5 2 Public Protection and Environmental Services, Newport City Council

The Public Protection and Environmental Services (PPES) department of Newport City Council are the statutory consultees on behalf of the local planning authority with regards to the human health risks associated with any contamination on site. As such, they have been consulted as part of the ongoing investigation and risk assessment of the site with respect to end-

users, with the ultimate aim of discharging Condition 6. As part of the planning process, PPES have also consulted the Local Health Board regarding the contamination issues on the site. All correspondence discussed below is included in Appendix G of this report.

The Interpretative Report and QRA (both dated October 2003) were both issued to PPES. In a meeting of the 8<sup>th</sup> January 2004 a number of queries were raised by PPES with regards to the documents, largely requiring further clarification of the methodology used. Similarly, a number of comments were made by the Local Health Board. The responses of both are summarised in the enclosures of the letter from Neil Boardman, Principal Planning Officer at Newport City Council, dated 16<sup>th</sup> March 2004.

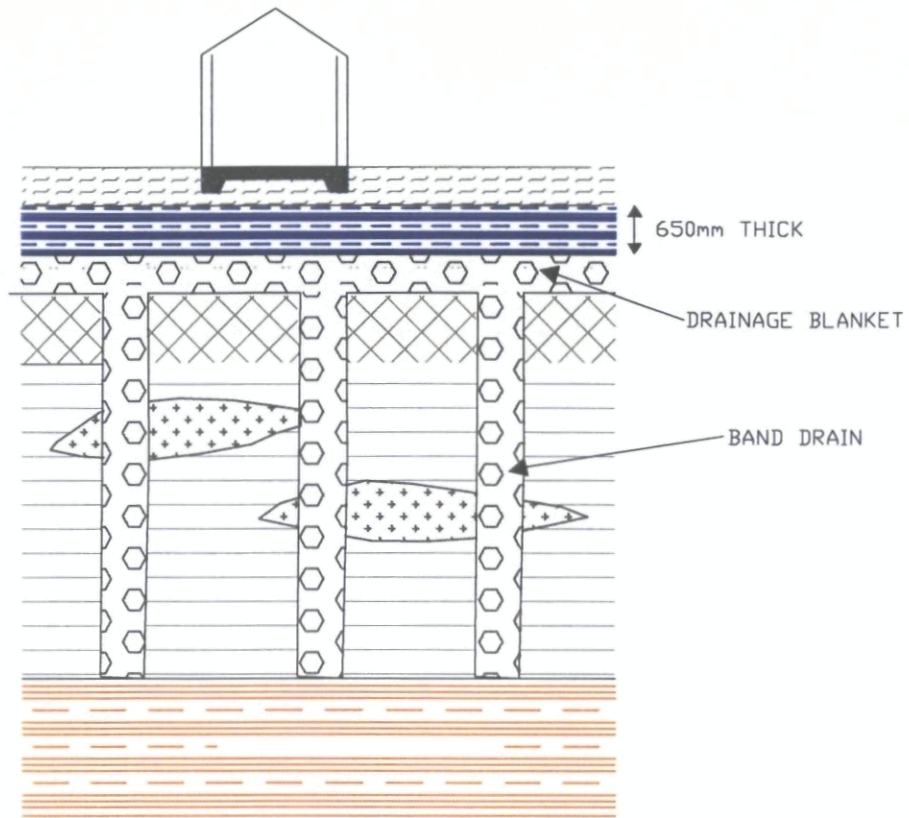
A response to the queries raised by both PPES and the Local Health Board regarding the assessment of the site are included in the letter from WYGE dated 8<sup>th</sup> April 2004. In addition to these queries, a number of additional points were raised by PPES with reference to the eventual remediation of the site. These largely arose following discussion of the matter in the meeting of 8<sup>th</sup> January 2004. These points are reproduced below, as they place some requirements on the remediation.

*"The information submitted as an outline remediation strategy is largely accepted with the provision that further details are clarified in the detailed remediation strategy. These should include*

- *Detailed strategy to deal with areas of significant PCB contamination. This should include details of barrel/ drum removal together with supplementary testing of surrounding soils and proposed disposal methods for excavated materials.*
- *Specific details on the depth and nature of the fill materials to be imported on to site to act as a capping layer. It should be demonstrated that the fill material is suitable in breaking all the relevant exposure pathways.*
- *Details on the testing frequency of testing of excavated materials to be used on site, together with approved concentrations that will be acceptable for re-use.*
- *As discussed above the detailed remediation strategy should also include specific information on the site's gas regime, and what protective measures are to be employed to protect site occupants/ users, and structures in general."*

The strategy outlined in this document is designed to address the concerns of Condition 6. As such, it has been written to satisfy both PPES and their respective consultees as to the robust nature of the assessment of the site, and the proposed detailed remediation strategy. This includes satisfying each of the above queries.

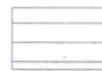
Subsequent to the above letter being issued, one meeting was convened with PPES (16<sup>th</sup> November 2005), and a further meeting was convened with the Local Health Board (2<sup>nd</sup> December 2005). In each meeting, the remediation strategy as laid out in this document was discussed, and the main concerns of each party noted and incorporated into this document. At both meetings there was a general consensus that the remediation strategy met respective requirements, subject to the issue and appraisal of this document.



KEY:



IMPORTED MATERIAL FOR LAND RAISE



ALLUVIAL CLAY



LOW PERMEABILITY CLAY LAYER



ALLUVIAL PEAT



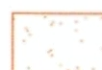
DRAINAGE BLANKET



WEATHERED OLD RED SANDSTONE (CLAY)



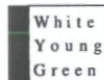
MADE GROUND



OLD RED SANDSTONE

**FOR INFORMATION ONLY**

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Project:  
PROPOSED SCHOOL AND RESIDENTIAL DEVELOPMENT,  
LAND AT GLEBELANDS, NEWPORT

Client:  
NORWEST HOLST CONSTRUCTION LTD.

Rev	Description	By	Chk	App	Date
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Drawing Title:  
SCHEMATIC CROSS SECTION DETAILING LAND RAISE

Scale of A4	Drawn By	Date	Checked By	Date	Approved By	Date
NTS	PJ	JAN 2008	GD	JAN 2008	JC	JAN 2008
Project No.	Office	Type	Drawing No.	Revision		
E3808	4406	ENV	106			

**Environmental Consultants**  
Civil Structural Mechanical Electrical Process Rail Traffic Environmental Project Management

APPROVAL  INFORMATION  TENDER  CONTRACT  CONSTRUCTION