

J G Hale Construction Ltd

**PHASE 1, COUNTY FLATS,
SANDFIELDS, ABERAVON**

Outline Remediation Strategy Report

12457/LW/21/ORS

CLIENT: J G Hale Construction Ltd

PROJECT: Phase 1, County Flats, Sandfields, Aberavon

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1.0 INTRODUCTION

1.1 GENERAL

Intégral Géotechnique (Wales) Limited (IG) have been appointed as Geotechnical and Geoenvironmental Consultants by J G Hale Construction Ltd to prepare a remediation strategy for the redevelopment of County Flats, Sandfields in Aberavon to a standard suitable for proposed public open space (POS) near residential housing end use.

It should be noted that this report refers to Phase 1 of the development.

The proposed development of Phase 1 will comprise the refurbishment of all six blocks and the construction of an additional fourth storey to each block. An additional link of up to four storeys is to be constructed between each pair of blocks, joining each pair. The buildings will be surrounded by parking areas and areas of soft landscaping/POS. It is understood a play area is to be situated in the south of the westernmost grassed area.

The following reports have been produced by Intégral Géotechnique (Wales) Limited:

- Sandfields County Flats, Sandfields, Port Talbot, Soil Infiltration Testing, Report No. 12457/DPD dated 31 May 2019,
- Sandfields, Aberavon, Site Investigation Report, Report No. 12457/RAH/19/SI dated September 2019,
- County Flats, Sandfields, Aberavon, Supplementary Site Investigation Report, Report No. 12457/LW dated 18 May 2021.

These reports have been relied upon as part of this remediation strategy and should be read in conjunction with this report.

The purpose of this report is to provide a remediation strategy for the delivery of the site to a standard suitable for the proposed residential end use and details how the remediation works will be supervised and validated.

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1.2 PROPOSED DEVELOPMENT

The proposed development of Phase 1 will comprise the refurbishment of all six blocks and the construction of an additional fourth storey to each block. An additional link of up to four storeys is to be constructed between each pair of blocks, joining each pair. The buildings will be surrounded by parking areas and areas of soft landscaping/POS. It is understood a play area is to be situated in the south of the westernmost grassed area.

2.0 BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

The site is located in Aberavon Sands, approximately 2km west-south-west of Port Talbot, at a National Grid Reference of 274650, 189780. A site location plan is presented in Figure 1.

The site is divided into two phases (Phase 1 and 2). Phase 1 comprises the north-western parcel of land containing six existing blocks of flats and the Phase 2 area comprises the south eastern parcel of land containing 4 larger blocks of flats.

It should be noted that this report refers to Phase 1 of the development.

The site is situated on largely level ground at an approximate elevation of 11m AOD. The site and surrounding area has historically been landscaped, classified as Artificially Modified Ground, during the development of the Sandfields Estate in the 1950s/1960s.

The site is covered by a combination of hardstanding and grassed area. Private access roads and parking areas running between or alongside block of flats are generally surfaced by tarmac or compacted gravels. The area immediately surrounding the blocks of flats is generally stone-paved and then much of the rest of the site comprises grassed areas and verges.

2.2 AVAILABLE SITE INVESTIGATION DATA

The following reports have been produced by Intégral Géotechnique (Wales) Limited:

- Sandfields County Flats, Sandfields, Port Talbot, Soil Infiltration Testing, Report No. 12457/DPD dated 31 May 2019,
- Sandfields, Aberavon, Site Investigation Report, Report No. 12457/RAH/19/SI dated September 2019,
- County Flats, Sandfields, Aberavon, Supplementary Site Investigation Report, Report No. 12457/LW dated 18 May 2021.

The above reports should be reviewed in conjunction with this report to gain a detailed appraisal of the site and the works completed to date.

The Site Investigation reports produced by Intégral Géotechnique provide the information on which this Outline Remediation Strategy report is based.

2.3 SITE HISTORY

The history of the site was assessed with the aid of historical maps. The earliest edition of the map dated 1876 indicated the site and the surrounding areas to be rough grassland and dunes known as Aberafon Burrows. The high-water mark of ordinary tides was indicated approximately 200m to the south-west of the site.

The 1899 edition of the map indicated that the site and the immediate surrounding areas had remained relatively unchanged. The Rhondda and Swansea Bay Railway had been constructed some 650m to the north-east and Sandfields had begun to develop beyond the railway line. Sand sidings were constructed to run from the railway towards the site and towards the sea.

The 1917-1919 edition of the site indicated the site to have remained an undeveloped part of Aberafon Burrows. Sandfields continued to expand to the north-east of the site. The sand siding which ran towards the site had been extended and led to a brick works building located approximately 150m to the north-east of the site.

The 1936-1940 edition of the map indicated that the site and the surrounding area remained undeveloped. Sandfields had extended beyond the railway line towards the site. The brick works building and the sand sidings were no longer present.

By the addition of the map dated 1952-1972 the site had been completely developed with a complex of flats including Morgannwg House, Flint House, Gwent House, Brecon House, Radnor House, Pembroke House, Cardigan House and Coronation House (circa 1960's). The boundaries of the site were formed by Moorland Road to the north-east, Dalton Road to the north-west and Bevin Avenue to the southwest. The area to the south-east was indicated to be rough grass and with a number of tanks within the area. Sandfields had extensively developed to the north-east and north-west of the site.

The edition of the map dated 1956-1984 indicated the site to have remained unchanged. The area to the south-west had been developed for use as a car park and with new access roads indicated. A promenade had also been constructed approximately 130m to the south-west of the site, parallel to the high-water mark of medium tides. The area to the south-east of the site was now developed with an indoor sports centre and a lido. There was no longer evidence of tanks within the area.

The areas to the south-west of the site continued to develop over the years which followed with the edition of the map dated 1966-1991 indicating further developments including a public house, a hotel and municipal offices.

2.3 SITE HISTORY (CONTINUED)

Development continued in the vicinity of the site over the subsequent years but the site itself remained unchanged with the configuration of the flats remaining as they were when they were constructed.

2.4 SUMMARY GROUND CONDITIONS

Several intrusive site investigations have been undertaken at the site as listed in Section 2.2.

Across the site, the typical ground conditions encountered consisted of either hardstanding or topsoil, over made ground and/or reworked sand, encountered to depths of between 0.3m and 0.6m below existing ground level. The made ground typically comprised of sand and gravel of limestone, quartzite, sandstone and concrete. The reworked sands typically comprised of sand deposits containing occasional gravel of limestone.

The made ground/reworked ground or topsoil, where made ground was absent was further underlain by superficial deposits consisting of Brown Sand. The deposits typically comprised of loose, loose to medium dense fine to medium sands. The deposits were proven to depths of between 1 and 5m below existing ground level.

Groundwater was not encountered during the drilling of any of the locations

2.5 IDENTIFIED CONTAMINATION

During the 2019 and 2021 investigations undertaken by Intégral Géotechnique representative samples were taken from across the site and tested for a range of chemical elements/compounds.

The suite of geo-environmental laboratory testing undertaken on the 12 made ground samples, 2 topsoil samples and 2 subsoils samples was based on the guidelines provided in the Environment Agency CLR publications as part of the CLEA Model, and other contaminants typical on brownfield sites.

- Beryllium, arsenic, cadmium, total chromium, chromium III, chromium VI, copper, lead, mercury, nickel, zinc, boron, elementary sulphur, selenium, total cyanide, pH value, total sulphate, water soluble sulphate, monohydric phenol, total polyaromatic hydrocarbons (PAH), asbestos screen and organic content.

2.5 IDENTIFIED CONTAMINATION (CONTINUED)

During the 2019 site investigation, elevated concentrations of several PAH compounds were detected within the made ground at one location, WS01 only. Asbestos containing material (ACM) was also encountered in the made ground at one location, HD2, in the form of asbestos (chrysotile) cement tile.

The results of the laboratory chemical testing on samples of topsoil from the areas of existing public open space (POS) indicated that the analysed chemical elements and compounds were present at concentrations below the appropriate thresholds based on a POS near residential area end use.

During the 2021 supplementary site investigation, the results of the laboratory chemical testing on representative samples of made ground and subsoil indicated that the analysed chemical elements and compounds were present at concentrations below the appropriate thresholds based on a POS near residential area end use.

2.6 CONCEPTUAL SITE MODEL

Based on the findings and observations, a conceptual site model has been defined for the site. This includes consideration to the identified made ground.

The potential active pathways by which future end users and the wider environment could be affected by the contaminant sources identified are listed below:

1. Outdoor/indoor ingestion of soil;
2. Outdoor/indoor exposure to soil through skin contact;
3. Outdoor/indoor inhalation of fugitive dust;
4. Indoor inhalation of ground gas;
5. Migration of contaminants in ground to drinking water supply pipes

The remediation works to be carried out at the site have been designed to address the identified potentially active contaminant pathways listed above.

2.7 DETAILED SITE SPECIFIC RISK ASSESSMENT

The general approach for assessing the potential risk to a receptor is by a combination of qualitative and quantitative risk assessment. A quantitative risk assessment would involve selecting and deriving generic assessment criterion to compare low risk substances, based on the fate, transport and toxicological properties and the exposure scenario being considered.

2.7 DETAILED SITE SPECIFIC RISK ASSESSMENT (CONTINUED)

With regard to assessing risk to human health, a generic quantitative risk assessment has been undertaken using published screening criteria values for a proposed POS end use.

The risk assessment considered that there were two hotspots/areas of contamination on site that require remedial measures in order to remove the potential risk to future end users. These areas requiring remedial measures are indicated on Figure 2.

A PAH hotspot was identified within the made ground at windowless sample borehole WS01 and a fragment of ACM was locally identified in foundation inspection pit HD2 within the backfilled materials overlying the existing foundation/footing.

It is considered that remedial measures will be necessary to protect future site end users and construction site operative from the localised PAH impacted made ground and the localised ACM identified onsite as indicated on Figure 2.

Based on the current proposed development layout, as shown on the Dennis Hellyer Architects drawing titled 'Masterplan-Site', drawing No. 175-DHA-ZZ-00-DR-A-0002, revision 08 dated 26/10/2020, WS01 is located below a proposed new building, surrounded by areas of hardstanding.

It is therefore recommended that following the delineation of the PAH hotspot at WS01, that the PAH impacted made ground is either retained on site under areas of hardstanding or alternatively disposed off site at an appropriate facility.

It is also recommended that in the area of HD2 and elsewhere on site if any further ACM is encountered, any identified ACM should be handpicked by an asbestos awareness trained contractor.

Elsewhere on site, the results of the laboratory testing on samples of topsoil, subsoil and made ground from the existing areas of POS indicate that the contaminant levels do not pose a risk to end users.

3.0 REMEDIATION STRATEGY

The findings of the site investigations carried out across the site has identified that a potential risk to end users exists due to a localised elevated concentration of PAH compounds and ACM fragments which have been identified locally within the made ground on site as indicated on Figure 2.

A remediation strategy is proposed such that the site is prepared to a standard suitable for the proposed POS end use to break any pollutant between any contaminated made ground and future site users.

This remediation process will ensure the delivery of a suitably remediated site for development and is of critical importance to the robustness of the remediation strategy.

The following remediation strategy is proposed for the PAH impacted made ground as identified on Figure 2:

- It is recommended that following site clearance, further samples are taken from the area around WS01 to assess and delineate the extent of the PAH hotspot.
- Following further sampling and testing to delineate the PAH impacted made ground at WS01, the made ground should be excavated. To sever the link between any PAH impacted made ground and future site users, it is recommended that the excavated made ground is either placed under areas of hardstanding or alternatively disposed of off-site at a suitable facility.
- If the excavated PAH impacted made ground is to be disposed off site at a suitable facility, daily records and waste transfer notes should be kept in order to document the removal of the PAH impacted made ground. These records and waste transfer notes should be made available for review as they will be required for remediation verification.
- Following the completion of the excavation of the PAH impacted made ground, the exposed excavations should be inspected, sampled and the samples taken sent to laboratory and tested for PAH compounds,
- The excavation of the PAH impacted made ground and placement under hardstanding or disposal off site would eliminate the risk to future site users. Following excavation and placement under hardstanding or removal from the site, no further remedial measures would be required with regard to the PAH contamination at WS01.

3.0 REMEDIATION STRATEGY (CONTINUED)

- Drinking water supply pipe specification to be agreed between J G Hale Construction and DCWW. The presence of organic contaminants (PAH compounds) should be considered when selecting water supply pipes.

The following remediation strategy is proposed for the ACM encountered at HD2 as shown on Figure 2:

- The made ground within the area of HD2 should be excavated and handpicked of any identified asbestos containing material (ACM). These works should be carried out by a suitably licensed contractor in accordance with an appropriate risk assessment and managed in accordance with the requirements of the Control of Asbestos Regulations (2012).
- Any handpicked ACM should be disposed of off-site at a suitable facility. Daily records and waste transfer notes should be kept, in order to document the removal of the ACM. These records and waste transfer notes should be made available for review as they will be required for remediation verification.
- During site clearance, if any further ACM is encountered it is recommended that the above recommendations are adhered to.
- Following removal of the any ACM encountered, the exposed excavation should be inspected, sampled and the samples taken sent to laboratory and screened for asbestos.
- The removal of the ACM and disposal off site would eliminate the risk to future site users. Following the removal of the ACM from the site, no further remedial measures would be required in regard to ACM.

Elsewhere, across the site no specific remedial measures are considered necessary.

4.0 REMEDIATION IMPLEMENTATION

4.1 OBJECTIVES

The main objective of the proposed remediation works is to render the site suitable for POS end use. The remediation activities required in order to achieve this objective are as follows:

- Break any potential pathway between proposed site end users and the localised PAH contaminated soils and ACM identified onsite as indicated on Figure 2.

4.2 METHODOLOGY

The remediation works required in order to meet the objectives defined above will be undertaken as follows:

- Removal of PAH impacted made ground and either placement under areas of hardstanding or disposal off site at an appropriate facility.
- Hand picking of encountered ACM and disposal off site at an appropriate facility.
- Adoption of DCWW agreed drinking water supply pipe.

The site will be deemed remediated by the following active remedial measures:

- Removal of PAH impacted made ground and either placement under areas of hardstanding or disposal off site at an appropriate facility.
- Hand picking of encountered ACM and disposal off site at an appropriate facility.
- Provision of DCWW agreed drinking water supply pipe.

Review of the methodologies will be a continuing process and subject to findings of the proposed validation works and, if necessary, further quantitative and qualitative risk assessments.

4.3 OPERATIONS

The works are to be undertaken by a specialist contractor experienced in brownfield reclamation/remediation. The remediation works will be monitored by Intégral Géotechnique (Wales) Limited.

Site preparation and operational constraints will be covered in the contractor's method statements. These should include the contractor's proposals for controls and monitoring of dust, noise, vibrations and odour.

4.3 OPERATIONS (CONTINUED)

Site procedures for managing the remedial works in a manner that will not cause pollution to controlled waters will be covered in the contractor's method statements which will be submitted in discharge of the Conditions of Planning.

The proposed remediation works will be controlled by the appropriate mobile treatment license to be held by the remediation contractor if such works become necessary. The conditions imposed under the planning process will be considered adequate to control the works.

Additionally, a system should be established by which any 'unusual' materials that may be encountered are reported rapidly to the site management, so that the appropriate action may be taken, following specialist advice if necessary. An unusual material may be identified on site by colour, odour or physical nature.

5.0 REMEDIATION VERIFICATION

5.1 OBJECTIVES

A remediation verification report is required in order to record the data gathering necessary to demonstrate that the works have been carried out in accordance with the agreed strategy, confirm that the works satisfy the site remediation criteria and that the site is suitable for the proposed development.

5.2 REMEDIATION VERIFICATION METHODOLOGY AND DATA GATHERING REQUIREMENTS

The site reclamation/remediation will be verified by the following measures:

- Validation of the removal of the PAH impacted made ground from the identified area.
- Validation of the hand picking and removal of any encountered ACM.
- Notification in the CDM file of residual risks associated with the remediated site.
- Certification by J G Hale Construction of installation of DCWW agreed drinking water supply pipe.

6.0 FINAL REMEDIATION VALIDATION

The development will not be complete, in accordance with the remediation strategy for the site, until the PAH impacted made ground as identified on Figure 2 is removed and either placed under hardstanding or disposal suitably off site and the previously identified ACM and any further encountered ACM is handpicked and disposed off-site at a suitable facility.

Following removal of the PAH impacted made ground and ACM fragments, in order to validate these works, following removal of the PAH impacted made ground and any ACM fragments, samples of the exposed underlying in-situ strata should be sampled and tested for contaminants (PAH compounds or asbestos fibres as applicable) to confirm that no residual contamination remains.

FIGURES

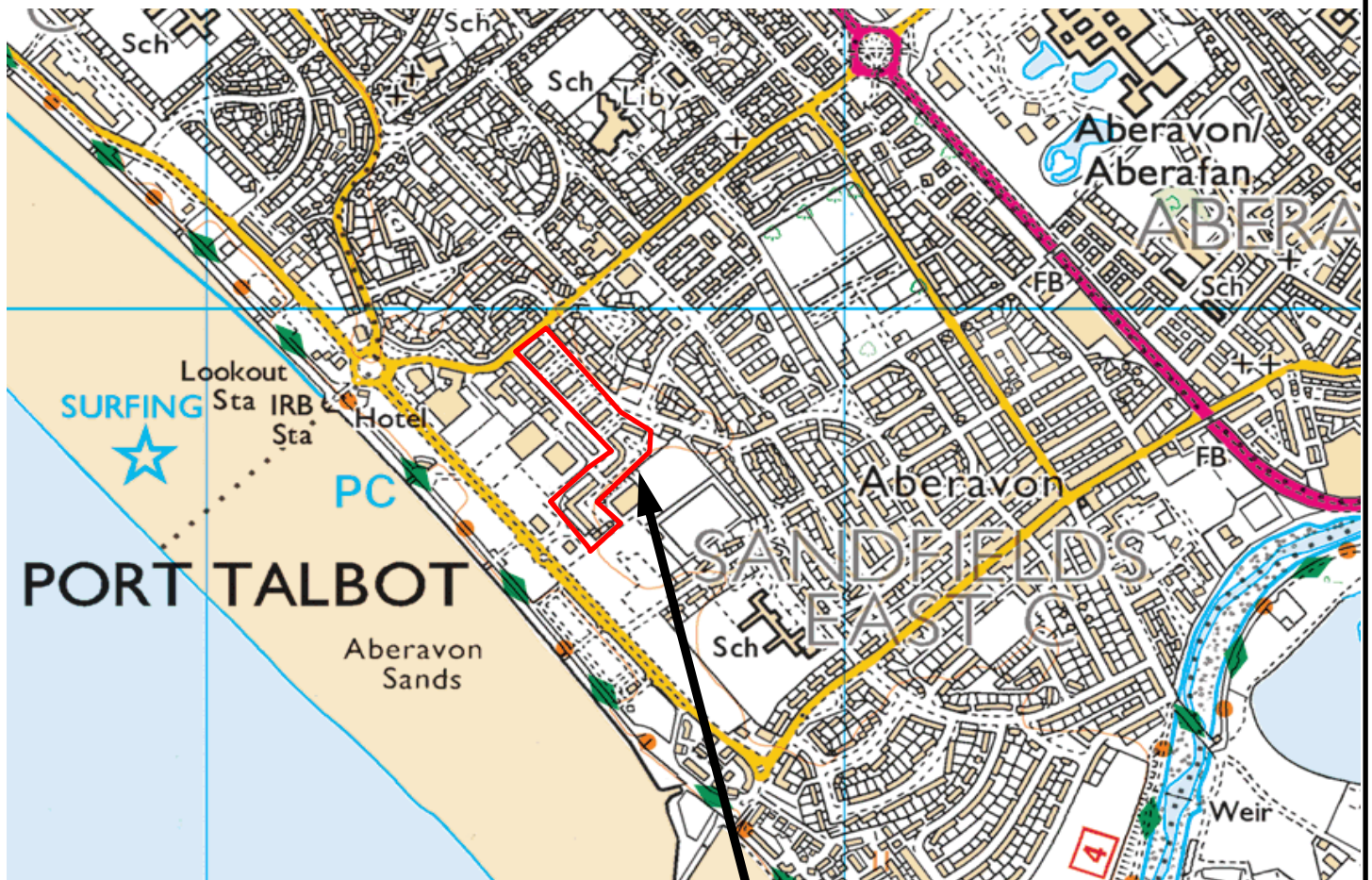
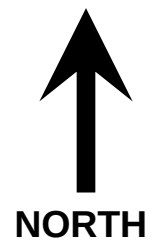


FIGURE 1: Site Location Plan

County Flats, Sandfields, Aberavon

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Figure 2: Exploratory Hole Location Plan

Project: County Flats, Sandfields, Aberavon

Client: Hale Construction

Job No.: 12457

Scale: NTS

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