

LAND AT BRADES RISE, OLDBURY, WEST MIDLANDS

REMEDIATION STATEMENT

1. In July 2001 Sandwell Metropolitan Borough Council identified an area of land known as *Land at Brades Rise, Oldbury, West Midlands* as contaminated land under Section 78B (1) of the Environmental Protection Act 1990 – Part IIA.
2. The Record of Determination for Land at Brades Rise is attached as Appendix 1.
3. Following determination as contaminated land, the Council as enforcing authority was required to consider how remediation of the site should be undertaken and whether it would be appropriate to issue a remediation notice to require such remediation to be undertaken.
4. Taking account of section 78H(5)(a) – (d) of Part 2A and the preference for remediation to be achieved without recourse to a remediation notice, the Council did not issue a Remediation Notice, being satisfied that voluntary remediation sufficient to mitigate any significant on-going risk would be undertaken within the planning process.
5. Morris Homes (West Midlands) Limited instigated appropriate site investigation, risk assessment and subsequent remediation within planning application DC/03/40544 and successive applications (APP/G4620/A/1137577 and DC/07/48517) at: Land at Brades Rise, Oldbury, West Midlands.
6. Morris Homes (West Midlands) Limited appointed GRM Development Solutions to design manage and validate remediation works, with groundworks undertaken by Armac Environmental Ltd.

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7. The following documents were provided throughout the project for review and approval by Sandwell MBC in their capacity as regulator;

Remediation Method Statement – Brades Rise Oldbury – Morris Homes (west Midlands) Limited – GRM Developments Limited - Ref: GRM/P4508/RMS.1 – August 2008;

Ground Improvement Strategy – Brades Rise Oldbury – Morris Homes (west Midlands) Limited – GRM Developments Limited – Ref: GRM/P4508/GIS.1 – October 2008;

Remediation Implementation Plan – Brades Rise Oldbury - Armac Environmental Ltd – Ref: AE/3664 Brades Rise/Implementation Plan – 05/07/10.

Brades Rise, Oldbury - Phase 1 Remediation Completion Report- Morris Homes (West Midlands) Ltd – Armac Environmental Ltd – Ref: AE/3664 Brades Rise/Phase 1 Completion Report – 05/08/10.

Brades Rise Completion Report - Phases 2, 3 and 4- Armac Demolition Ltd – May 20-14.

The following documents form part of this record within Appendix 2;

The Forge, Brades Rise, Oldbury – Phase 1 Certificate of Completion – GRM Developments Limited – Ref: P4508 – SMBC15. Let – 19/10/11.

The Forge, Brades Rise, Oldbury – Phase 2 Certificate of Completion – GRM Developments Limited – Ref: P4508 – SMBC17. Let – 27/02/15.

The Forge, Brades Rise, Oldbury – Phase 3 Certificate of Completion – GRM Developments Limited – Ref: P4508 – SMBC18. Let – 27/02/15.

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*The Forge, Brades Rise, Oldbury – Phase 4 Certificate of Completion –
Ref: P4508 – SMBC19. Let – 27/02/15.*

8. The documentation set out above provides evidence that the site known as *Land at Brades Rise, Oldbury, West Midlands*, that has been determined as contaminated land, has now been remediated to a degree considered satisfactory. As a result, the site is now deemed suitable for its current use.
9. The site is now occupied by residential premises. This statement applies to all such premises on Bhullar Way, Ditta Drive, Mayfly Close, Gower Croft and Silverlight Grove.

Remediation Method Summary

- i. Site investigations undertaken prior to redevelopment works had determined the site to pose a “*significant risk of significant harm*”, due to the generation of landfill gas. Furthermore, in terms of the proposed redevelopment ground conditions were deemed unsuitable due to the presence of putrescible waste and elevated concentrations of contaminants.
- ii. In summary, remedial earthworks comprised excavation, sorting and re-compaction of the upper 3-6m of site soils. Within this process deleterious, oversized or unsuitable materials were segregated for disposal.
- iii. Following completion of the excavation and re-compaction programme, a perimeter gas vent trench was constructed around the site boundary to mitigate risk of off-site gas migration. The vent trench was excavated to a depth of 3mbgl and backfilled with no fines aggregate (grain size 10-40mm). To account for the depth of made ground within the site, aggregate vent columns were also installed within the trench at 20m

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intervals to a depth commensurate with the base of the made ground. The vent trenches remained open to atmosphere to maximise venting potential. In lieu of a vent trench the north-eastern boundary (which is higher than adjoining land) was finished with an open aggregate crib-lock wall.

- iv. In order to mitigate on site risks from both ground gas and contaminated soils, a soil capping system was implemented across the site. In summary, this comprised 450mm clean soil overlying a granular drainage layer. Beneath this a 1000mm low permeability clay cap was constructed underlain by a 250mm gas venting layer (10-40mm aggregate) connected to the boundary vent trench. Layers were interspersed by geotextile.
- v. In addition to the installation of the clay capping system, each property was also equipped with a gas resistant membrane, extended across cavities and with sealed service entries.
- vi. The works summarised were designed and overseen by GRM Developments Limited (acting on behalf of Morris Homes (West Midlands) Ltd). Remedial groundworks were undertaken by ARMAC Environment/ Demolition Limited. On completion GRM Development Limited validated all remediation and gas protection works to a standard agreed with regulators.
- vii. To ensure that the installed gas management system provides on-going protection post completion a Section 106 Agreement was entered into. This required an environmental to consultant to be appointed to undertake monitoring work and produce an annual report for a period of up to 10-years post completion. This process is continuing to be undertaken by GRM Developments Limited.

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Conclusion

- i. This statement was produced by [REDACTED] (Senior Environmental Protection Officer) in January 2024.
- ii. The purpose of the document is to provide confirmation that the site known as *Land at Brades Rise, Oldbury, West Midlands* has undergone voluntary remediation sufficient to address the pollutant linkage identified within the record of determination.
- iii. The voluntary remediation undertaken on behalf of Morris Homes (West Midlands) Limited was validated by GRM Developments Limited as appropriate to facilitate the redevelopment of the site for residential use.
- iv. The site is now occupied by residential premises. This statement applies to all such premises on Bhullar Way, Ditta Drive, Mayfly Close, Gower Croft and Silverlight Grove.

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APPENDIX 1

Sandwell Metropolitan Borough Council

Record of Determination that land at Brades Rise is Contaminated Land

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SANDWELL METROPOLITAN BOROUGH COUNCIL

Record of Determination that land at Brades Rise is Contaminated Land

Environmental Protection Act 1990, Part IIA

1.0 Description of land

Land at Brades Rise, Oldbury, Warley, West Midlands, as outlined in red on the attached plan.(grid reference SO 397823 289881).

2.0 Description of significant pollutant linkage

2.1 The aforementioned land has been the subject of investigation by this Council since 1994. In particular, attention has been paid to the monitoring of methane gas generated by the degradation of deposits in and on land at Brades Rise. Regular gas monitoring of gas boreholes shows that methane gas is migrating underneath adjoining domestic properties at Brades Rise, Oldbury, Warley.

2.2 A summary of the pollutant linkage regarding this land is described in tabular form below.

SOURCE	PATHWAY	RECEPTOR
Degradation of uncontrolled deposits in and on land at Brades Rise giving rise to methane gas.	Migration of methane gas through the ground	Domestic properties 1-79 odds Brades Rise, Oldbury, Warley, West Midlands

2.2.1 A "pollutant linkage" means the relationship between a contaminant, a pathway and a receptor. Unless all three elements of a pollutant linkage are identified in respect of a piece of land, that land should not be identified as contaminated land. A "significant pollutant linkage" means a pollutant linkage which forms the basis for a determination that a piece of land is contaminated land. (DETR, 2000).

2.2.2 The assessment of the evidence outlined in 3.0 and 4.0 below provides the basis upon which the Council has decided that the pollutant linkage described above is a "significant pollutant linkage".

- 2.3 Reference is made only to methane gas for the purposes of this determination of land at Brades Rise as contaminated land under the Environmental Protection Act 1990.
- 2.3.1 Paragraph A.30 of the Statutory Guidance states that the Local Authority should regard as significant possibility, any possibility of significant harm, which meets the conditions set out in Table B for the description of significant harm under consideration.
- 2.3.2 This determination refers to significant risk of significant harm with respect to:
- a) Item 2 in Table B which refers to human health effects particularly by way of explosion or fire. (Paragraph A.30)
 - b) Item 5 in Table B which refers to all building effects where harm would result from a single incident such as a fire or explosion. (Paragraph A.32)
- 2.4 The usual major constituents of landfill gas are methane and carbon dioxide, both of which are colourless and odourless. When methane is mixed with air, within certain concentration limits known as the "flammable" or "explosive" range, the resultant mixtures may ignite to produce fires and explosions. The flammable range for methane is 5%-15% by volume in air. (Department of Environment (DOE) 1989). It is recognised however that landfill gas components do not normally separate when collecting in voids but layers of landfill gas may form in still air conditions as a result of density differences. (DOE, 1989).
- 3.0 **Summary and Relevant Assessment of Evidence upon which the determination is based**
- 3.1 Waste Management Paper 27 states that;
- Monitoring should continue until :-
- (a) the maximum concentration of flammable gas from biodegradation within the landfill remains less than 1% by volume (20% LEL) within the wastes over a 24 month period taken on at least four separate occasions including two occasions when atmospheric pressure was falling and was below 1,000 mb or
 - (b) an examination of the waste using an appropriate statistical sampling method provides a 95% confidence that the biodegradable matter has been used up.
- 3.1.1 The assessment of risk of explosion arising from the landfill in (a) is undertaken by the assessment of monitoring data using a threshold of one fifth of the lower explosive limit for methane representing a factor of safety of 5 times. Alternatively in (b) the waste may be examined using a statistical sampling method employing 95% confidence limits.

- 3.2 A site investigation of the Brades Rise site was commissioned in 1994, by the then Environment and Development Services Department of Sandwell MBC. This work was carried out with the agreement of the current owners PRB Properties Limited.
- 3.3 Landfill gas was being detected within the area of the fill, therefore further monitoring boreholes were installed between the alleyways of the domestic properties at Brades Rise, using supplementary credit approval monies from the Department of Environment in 1994. In November 1999, two new monitoring boreholes were installed along the boundary with the Brades Hall Industrial Estate, Summerton Road Oldbury. These are known as boreholes, B and C. Boreholes 1,3,5,12,16,22,27,33,34 and 36 were also re-drilled.
- 3.4 Appendix 1 entitled Methane Concentrations (95% confidence limit) provides gas monitoring borehole locations at Brades Rise.
- 3.5 Sampling is carried out by a contractor on a monthly basis, with gas samples being collected in sampling cylinders (bombs) and analysed by way of gas chromatography.
- 3.6 The mean and standard deviation were calculated for the range of readings at each borehole. Limits of the mean plus or minus twice the standard deviation should capture approximately 95% of the area beneath the normal distribution curve representing the data in each range. In other words on average around 95% of the recorded methane concentrations should fall between these limiting methane values. More accurately using two standard deviations above the mean on average only 2.2% of all readings (or one reading in 45) will be above this upper limit. Appendix 2 contains the method for assessing risk in greater detail.
- 3.7 A contour plan was drawn using the concentrations representing the upper confidence limits. This is shown in Appendix 1, drawing number S145/3/01, entitled Methane concentrations (95% confidence limits). The contour representing the 5% methane concentration represents a line at which statistically only 1 in 45 methane readings will exceed the lower explosive limit. Beyond this line no more than 1 in 45 readings will exceed the lower explosive limit. Within this line at least 1 in 45 gas readings will exceed the lower explosive limit. This line has been used to assess which properties are at significant risk of significant harm from flammable gas.
- 3.7.1 The aforementioned contour plan in Appendix 1 shows the following:
- (a) The 5% methane contour (based on the 95% upper confidence limit) extends underneath the domestic properties 1-79 odd numbered domestic properties at Brades Rise, Warley.
 - (b) The 10% methane contour (based on the 95% upper confidence limit) extends under properties 1-77 odd numbered domestic properties at Brades Rise Oldbury, Warley.
 - (c) The 15% methane contour (based on the 95% upper confidence limit) extends underneath 5-75 odd numbered domestic properties at Brades Rise, Oldbury.

- 3.8 Landfill gas has the potential to migrate through the soil profile by two means, namely advection and to a much lesser extent diffusion. Gas may enter a building via cracks, and gaps in the floor, cavities in walls, gaps around service ducts, construction joints, and structural cracks beneath ground level. When flammable mixtures accumulate and are ignited within a confined space eg a building, an explosion may result. The flammable range for methane is 5%-15% by volume in air. (Sandwell MBC, 1996)
- 3.9 Tipping was not licenced, and there were no measures undertaken to control landfill gas generation arising from the degradation of deposits in and on the land.
- 3.10 The Council's Building Consultancy reports that it is unlikely that domestic properties built on Brades Rise, Oldbury would have incorporated any specific gas protection measures.
- 4.0 **Conclusion**
- 4.1.1 The flammable range for methane is 5%-15% by volume.(DOE, 1989)
- 4.1.2 The contour plan in Appendix shows the 5%, 10% and 15% methane gas concentration contours (based on the 95% upper confidence limit) extending underneath the domestic properties at Brades Rise (see paragraph 4.1.2)
- 4.1.3 In terms of human health effects, the pollutant linkage described in paragraph 2.2 above might cause:
- (a) significant harm from a single incident such as fire or explosion and (Table B)
 - (b) significant harm which would be irreversible or incapable of being treated. (Table B)
- 4.1.4 In terms of building effects, harm would result from a single incident such as fire or explosion. (Paragraph A,32)
- 4.1.5 The Council's Building Consultancy reports that it is unlikely that domestic properties built on Brades Rise or adjoining industrial units in Summerton Road would have incorporated any specific gas protection measures.
- 4.2 Having assessed the evidence above, it is concluded that there is significant possibility of significant harm being caused and therefore the land at Brades Rise is determined as contaminated land under the Act.

References

Department of Environment, Transport and the Regions (DETR), (2000), Circular 02/2000 on Contaminated Land containing Statutory Guidance in Annex 3. Stationary Office pages 28, 69-75, and 87

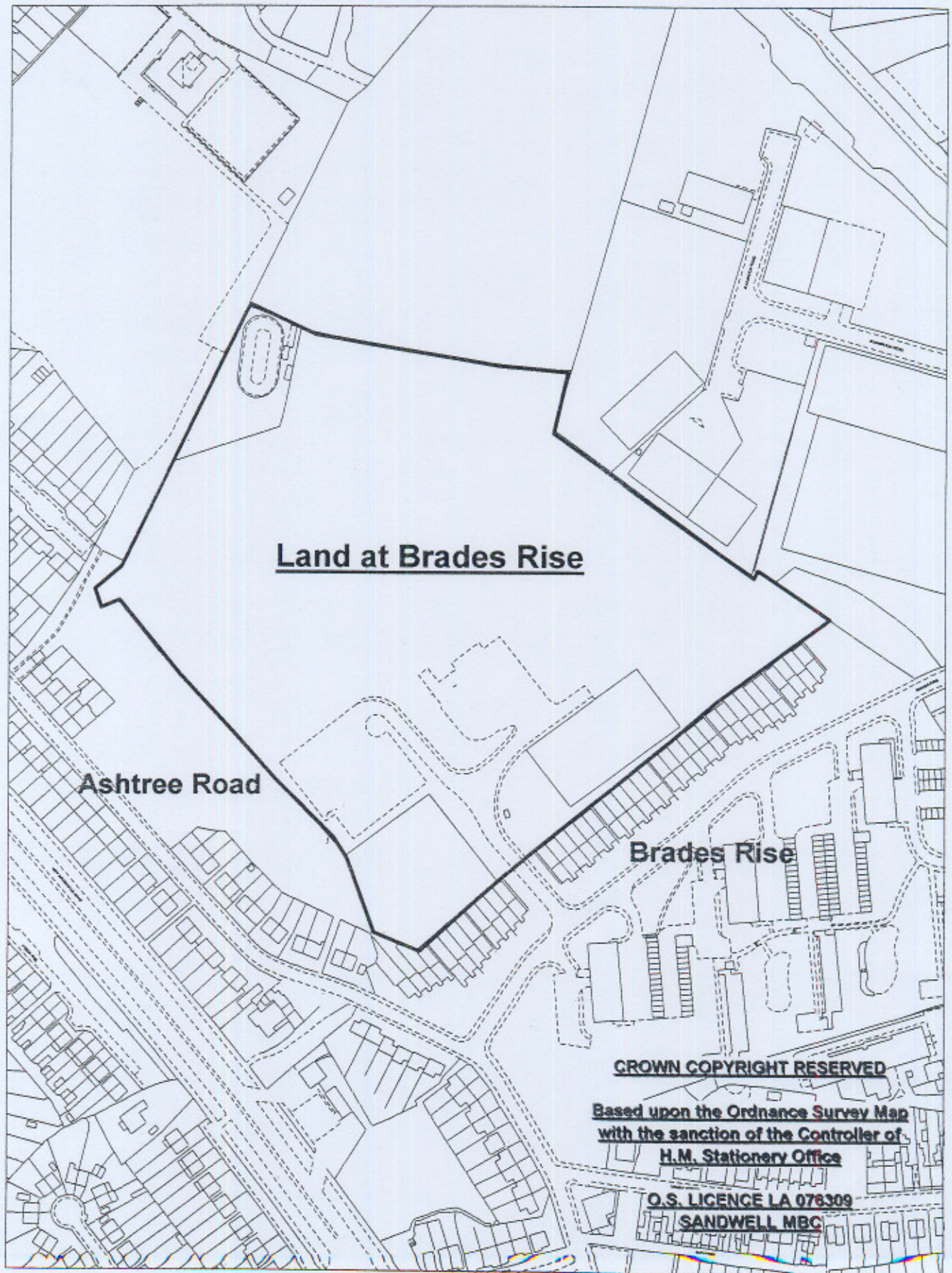
Department of the Environment (DOE) (1989), Waste Management Paper 27 - Landfill Gas, Her Majesty's Stationary Officer (HMSO) ISBN 0 11 752488 3 pages 15-16

Sandwell Metropolitan Borough Council (1996) Interpretive Report for the Former Sports Ground at Brades Rise Oldbury page, page 13

Sources of information held by Sandwell Metropolitan Borough Council
(as referred to in the Interpretive Report for the Former Sports Ground at Brades Rise, Oldbury Sandwell MBC, 1996)

1. Wardell and Partners Report for Edwards Bigwood and Bewlay
2. Site Investigation by British Reinforced Concrete for Kelly Homes August 1973
3. Foundex Site Investigation Report for Accles and Pollock 1975
4. City of Birmingham I.R.L. Technical Report to Malcolm Payne Associates 1976
5. Ground Investigation Report by Ground Investigation and Piling, 15th July 1987
6. Geotechnics Investigation for PRB Properties Limited December 1988
7. Maurice Jones Associates Feasibility Study for PRB Properties Limited 1989
8. Cox Turner Morse Discussion Document for PRB Properties Limited 1993
9. Geochem Group Limited Interpretation of G. C. Analysis November 1992
10. British Geotechnical Report for Sandwell MBC, August 1994
11. C.A.S. Gas monitoring results for Sandwell MBC. 1994 to 1996

**Sandwell Metropolitan Borough Council
Environmental Health & Trading Standards**



Land at Brades Rise

Ashtree Road

Brades Rise

CROWN COPYRIGHT RESERVED

**Based upon the Ordnance Survey Map
with the sanction of the Controller of
H.M. Stationery Office**

O.S. LICENCE LA 076309

SANDWELL MBC

APPENDIX 2

Sandwell Metropolitan Borough Council

Remediation validation documentation

Land At Brades Rise, Oldbury, West Midlands

Remediation Statement



RE: The Forge, Brades Rise, Oldbury

Further to our previous correspondence regarding the Morris Homes development at the above site, we confirm that on phase 1, the remediation measures for the gas management system have been completed in accordance with the previously submitted and approved designs.

The remedial works comprised of the following works:

- Excavation and removal from site of putrescible waste from within 8m of finished ground levels,
- Re-engineering of suitable fill materials into the resultant void,
- Placement of the horizontal gas venting layer on top of the re-engineered materials,
- Placement of 1m of clay to form an in ground gas barrier,
- Construction of the perimeter vent trench and vent columns, ensuring continuity with horizontal gas venting layer.

Following the above works, the agreed program of gas monitoring has been carried out. This program has confirmed the effectiveness of the horizontal gas venting layer and clay gas barrier in preventing the vertical migration of ground gases. Gas monitoring of the off site gas standpipes indicates that concentrations of ground gasses, particularly of methane, have reduced since the completion of the Phase 1 works.

We would therefore request that in accordance with Clause 7, Schedule 5 of the Section 106 agreement for the site, you accept this letter as a Completion of Works Certificate for the gas management system on Phase 1 of the site.

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

Yours sincerely



Senior Engineering Geologist



RE: The Forge, Brades Rise, Oldbury

Further to our previous correspondence with [REDACTED] regarding the Morris Homes development at the above site, we confirm that on phase 2, the remediation measures for the gas management system have been completed in accordance with the previously submitted and approved designs.

The remedial works comprised of the following works:

- Excavation and removal from site of putrescible waste from within a minimum of 6m of finished ground levels,
- Re-engineering of suitable fill materials into the resultant void,
- Placement of the horizontal gas venting layer on top of the re-engineered materials,
- Placement of 1m of clay to form an in ground gas barrier,
- Construction of the perimeter vent trench and vent columns, ensuring continuity with horizontal gas venting layer.

Following the above works, the agreed program of gas monitoring has been carried out. This program has confirmed the effectiveness of the horizontal gas venting layer and clay gas barrier in preventing the vertical migration of ground gases.

We would therefore request that in accordance with Clause 7, Schedule 5 of the Section 106 agreement for the site, you accept this letter as a Completion of Works Certificate for the gas management system on Phase 2 of the site.

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

Yours sincerely



Principal Foundation Engineer



RE: The Forge, Brades Rise, Oldbury

Further to our previous correspondence with [REDACTED] regarding the Morris Homes development at the above site, we confirm that on phase 3, the remediation measures for the gas management system have been completed in accordance with the previously submitted and approved designs.

The remedial works comprised of the following works:

- Excavation and removal from site of putrescible waste from within a minimum of 6m of finished ground levels,
- Re-engineering of suitable fill materials into the resultant void,
- Placement of the horizontal gas venting layer on top of the re-engineered materials,
- Placement of 1m of clay to form an in ground gas barrier,
- Construction of the perimeter vent trench and vent columns, ensuring continuity with horizontal gas venting layer.

Following the above works, the agreed program of gas monitoring has been carried out. This program has confirmed the effectiveness of the horizontal gas venting layer and clay gas barrier in preventing the vertical migration of ground gases.

We would therefore request that in accordance with Clause 7, Schedule 5 of the Section 106 agreement for the site, you accept this letter as a Completion of Works Certificate for the gas management system on Phase 3 of the site.

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

Yours sincerely



Principal Foundation Engineer



RE: The Forge, Brades Rise, Oldbury

Further to our previous correspondence with [REDACTED] regarding the Morris Homes development at the above site, we confirm that on phase 4, the remediation measures for the gas management system have been completed in accordance with the previously submitted and approved designs.

The remedial works comprised of the following works:

- Excavation and removal from site of putrescible waste from within a minimum of 6m of finished ground levels,
- Re-engineering of suitable fill materials into the resultant void,
- Placement of the horizontal gas venting layer on top of the re-engineered materials,
- Placement of 1m of clay to form an in ground gas barrier,
- Construction of the perimeter vent trench and vent columns, ensuring continuity with horizontal gas venting layer.

Following the above works, the agreed program of gas monitoring has been carried out. This program has confirmed the effectiveness of the horizontal gas venting layer and clay gas barrier in preventing the vertical migration of ground gases.

We would therefore request that in accordance with Clause 7, Schedule 5 of the Section 106 agreement for the site, you accept this letter as a Completion of Works Certificate for the gas management system on Phase 4 of the site.

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

Yours sincerely



Principal Foundation Engineer