

3.0 RISK ASSESSMENT

3.1 Definition of Risk and Categories

Risk is defined as the combination of: (a) the probability, or frequency, of occurrence of a defined hazard (for example, exposure to a property of a substance with the potential to cause harm); and (b) the magnitude (including the seriousness) of the consequences.

Magnitude of Consequence				
Probability of Hazard	Severe	Medium	Mild	Minor
High Likelihood	Very high risk	High risk	Moderate risk	Low risk
Likely	High risk	Moderate risk	Moderate/low risk	Low risk
Low likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Walkover inspections were undertaken at the development site and at locations of other “potentially contaminative” sites and findings were recorded at paragraph 2.3.

3.2 Theoretical Source/Pathway/Receptor Linkages

Theoretical Source/Pathway/Receptor Linkages are shown in the following table and the information contained within this section of the report constitutes the Conceptual Site Model.

Source	Hazard	Pathway	Potential Linkage	Receptor	Risk
Potential Contamination arising from farming	Pathogens	Ingestion	Very unlikely	workers residents	Very low
	residual fertilisers and pesticides	dermal contact		workers	Very low
		migration via saturated zone	Very unlikely	water environment	Very low
Potential Contamination from former landfill activities	contaminants from “made ground” including sulphates metals; hydrocarbons	dermal contact	Very unlikely	residents workers	Very low
		Ingestion	Very unlikely	residents building structures	Very low
				water environment	Very low
	asbestos	Inhalation	Very Unlikely	residents	Very low
	Landfill gas	Migration via unsaturated zone	Very unlikely	buildings workers residents	Very low
	leachate	Migration Via Saturated zone	Very unlikely	water environment	Very low

Source	Hazard	Pathway	Potential Linkage	Receptor	Risk
Potential Contamination from former mining activities	Metals; PAH; dioxins and furans hydrocarbons	Ingestion absorption inhalation	Very Unlikely	Workers residents	Very low
	gases	Migration via Unsaturated Zone	Very Unlikely	buildings residents	low
	coal dust	Inhalation		residents	Very low

3.3 Assessment

3.3.1 Development Site - Historic Maps and other information indicate that the development site has been used for nothing other than farming/agriculture. In the course of the walkover no evidence of contamination of the development site was evident and information from the landowner and the other available information is consistent in that there is no evidence or record of pollution or contamination of the development site.

3.3.2 On the basis of historic mapping it is concluded that the site has been used only for agriculture. Some farming and agricultural activities may result in contamination – for example as a result of burial of dead stock, improper use of chemicals or by spillages, however the landowner states that the ground has been used only for grazing for the last 27 years and he states there has been no potentially contaminative activity or incidents. Further the site will be subject to comprehensive ground works if the development proceeds and it is therefore considered that risk from historical agricultural use is very low.

3.3.3 Outwith the Development Site- Potentially contaminative activities undertaken outwith the development site has been identified as; - farming; areas of surface tipping/landfill; and mining.

3.3.4 Landfill of biodegradable waste results on the production of harmful gases including methane and carbon dioxide. Firstly, there is no evidence of landfilling of any waste on the development site or indeed nearby. Land to the north and east of the development plot accommodated colliery spoil heaps generally comprising excavated rock and soil with minimal biodegradable content. The pits closed 116 years ago, the colliery spoil has been removed, there is now no evidence of spoil and in any case the locations were remote from the development site and therefore present no significant risk of contamination.

3.3.5 The Bo'ness area has a long history of mining. In general terms potential primary contaminants arising directly from mining activities include coal residues/dusts; and mine gases. With regard to coal residues and dust – mining ceased about 116 years ago and the development site has never been used for anything except agricultural use. In the course of walkovers of the site no evidence of coal dust or mining residues was noted and there was no evidence of coal dust or of coal residues in the wider area. Given that there has been no surface mining use on or near the site, the time that has elapsed and the absence of any coal residues it is concluded that there is no significant risk from coal residues/dust.

With regard to mine gases The Coal Authority state that within the area there is no record of any mine gas emission requiring their action and their records indicate there are no Mine Gas Sites within the wider area. The former mine workings ceased 116 years ago and there are no mine shafts in the vicinity of the development plot. Simpson Geotechnical have provided a Coal Mining Risk Assessment (CMRA) which advises the site is underlain with 5m of boulder clay and that this will prevent gas migration - if indeed any gas is present. Further, the CMRA advises that boreholes will require to be sunk to ascertain the depth to old workings and the amount of rock cover – and this will facilitate gas monitoring.

3.3.6 Asbestos cement sheets were often used in construction of industrial and agricultural buildings and sometimes domestic outbuildings. There have been no buildings on the site. No evidence of asbestos waste was detected at the development site, or in the vicinity, in the course of the walkover. There is no evidence of the development site being used for disposal of asbestos or other wastes. If buried asbestos is present off-site, it presents no risk whatsoever to the development site

as there is no linking pathway.

3.3.7 No invasive species were present on the development site, or on adjoining sites.

3.3.8 There are no water features on the development site. Discharge arrangements for surface water and wastewater from the proposed new development will be subject to consents from Building Standards and the Scottish Environment Protection Agency and will have no significant adverse effect on the water environment. It is considered that there is no significant risk from the development to the water environment or vice versa.

3.4 Water Pipe Assessment

UK Water Industry Research (UKWIR) issued a Report entitled “Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites” (10/WM/03/21 refers).

The UKWIR publication focuses on contaminants which will affect the physical and chemical characteristics of pipe materials; advises that certain contaminants are not considered a risk in terms of pipe selection; and identifies organic compounds as the biggest risk to water pipes.

Plastic water supply pipes are permeable to hydrocarbons such as petrol, diesel, heating fuel and white spirits and, where contamination is identified, a material which is not permeable to hydrocarbons – such as copper, ductile iron, aluminium lined polyethylene or plastic coated copper – should be used.

The UKWIR guidance advocated Site Assessment, with Stage 1 comprising a “Preliminary Risk Assessment” (PRA) including – (a) Desktop Study (b) Site Walkover (c) the Preliminary Risk Assessment and (d) Review of findings.

If chemicals have been stored or used on site further assessment is required by way of a (Stage 2) Site Investigation.

The requirements of the UKWIR guidance overlap with the work routinely undertaken as part of a Phase 1 Contaminated Land Assessment. There is no evidence that the development site or adjoining land have been contaminated and it would be reasonable to argue the site is not a brownfield site. It can be concluded from the Desktop Study and walkover that there has been no significant historical contaminative use; that chemicals have not been stored or used on the site; that there is no need for chemical restriction on pipe material selection and that no further work is required in this regard.

4.0 CONCLUSIONS & RECOMMENDATIONS

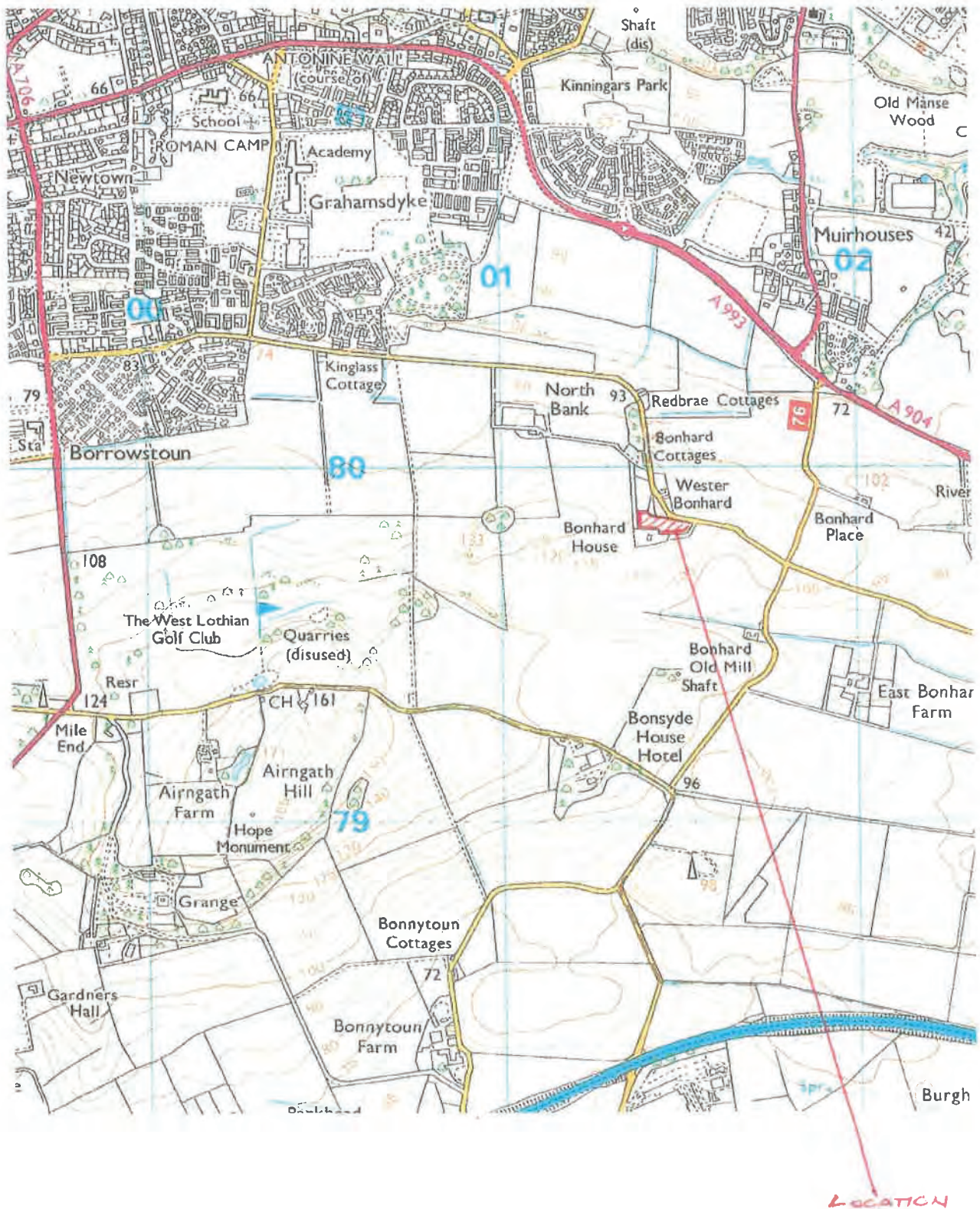
4.1 There is no evidence of significant contamination of any part of the development site either from the site itself or from elsewhere.

4.2 The development proposal presents no significant potential risks to human health, ecological receptors, property or the water environment.

4.3 Following assessment of the site in accordance with UKWIR guidelines it is concluded that there is no need for specialist water pipe materials.

4.4 The Coal Mining Risk Assessment by Simpson Mining and Geotechnical Limited recommends additional site investigation works including both boreholes and trial pits which will afford the opportunity to undertake gas monitoring.

APPENDICES



PLOT OF LAND SOUTH OF WESTER BONNYTON

BONNESS EH51 9RR

LOCATION PLAN - c. 1/15,000



APPENDIX 1/2

