

CONTAMINATED LAND ASSESSMENT

INTRODUCTION

This section provides brief details on the outcome of investigations into contaminated land issues at the site. Full details are contained in reports compiled by Clarke Bond as follows:

- Corby Northern Orbital Road, Phase 1 Geoenvironmental Desk Study. EL00333/R1/1, November 2006;
- Corby Northern Orbital Road, Geoenvironmental Interpretation. EL00333/R2, November 2006

Desk Study

The desk study review has indicated the site to be underlain with natural geology incorporating Glacial Till overlying beds of the Upper Oolite Series of Jurassic age. The in situ geology is, however, only present in the southern portion of the route, with the remaining portion to be constructed on worked ground of backfilled former ironstone quarries.

The fill material within the former quarries largely comprises overburden material from the quarries, being largely reworked Glacial Till and limestone.

Potential sources of contamination that may affect the development include:

- Former industrial activities on or adjacent to the site, including quarrying and iron and steel production;
- Associated activities including railway infrastructure;
- Undocumented landfill materials, including presence of steelworks tailing to the north of RS3;
- Existing industrial activities;
- Motor racing activities at Rockingham Speedway.

The conceptual model has indicated the potential for contamination affecting both on-site and off-site receptors to be high.

Intrusive Investigations

The intrusive investigation was undertaken in September 2006 comprising 39 window sample bores; 32 trial pits; 15 cable percussion bores; 12 road cores. Monitoring wells comprising combined water/gas standpipes were

installed in selected boreholes. Monitoring visits have been subsequently undertaken and are programmed to continue into the spring of 2007.

Soil samples were subjected to test for a variety of chemical contamination indicators. The conclusions from the investigation are summarised in the following paragraphs.

With exception of two (2no.) potential areas of concern (PAOC) (see below), the environmental investigation indicates that contamination generally poses a low risk to the human health of future site users, providing the proposed use of the site does not alter from a road.

Elevated values of Total Ammonia were found in water samples from boreholes that were located in the Willow Brook valley in the vicinity of a drainage outfall discharging from a former landfill area containing foundry tailings (colloquially known as the "Ammonia Spring"). The groundwater levels indicate hydraulic continuity with the Brook. Due to the depth of water in the ground and the fast rate of ammonia disintegration (days), there is no risk associated with the road construction.

Elevated levels of zinc, lead and hydrocarbons have been measured at depths that pose a potential to migrate to groundwater. Lead is a heavy metal that tends to adsorb to soil particles and is essentially insoluble in water. Some of the medium hydrocarbons (C12-16 range) are not persistent and biodegrade in soils with sufficient organic matter. Based on the nature of these contaminants, the low permeability of the soil where these results were measured, and the absence of a measurable aquifer beneath these areas, no pollutant linkage to groundwater has been identified.

In respect to risk posed to human health from elevated concentrations of contaminants, construction of the road will effectively cap the soils reducing the likelihood of ingestion and inhalation pathways between source (contaminated soil) and human receptor (site user). The pathways will be further reduced by the nature of the site and average duration that site users will be within it; i.e. the majority of site users will traverse the site in or on a vehicle and will not remain on the site for prolonged periods of time. Therefore the risk to future site users from contaminants outside of the identified Potential Areas of Concern (**PAOC**) is considered low.

PAOC 1 - An area of concern was identified to the west of Roundabout 4 at TP41. The maximum value test concluded that the elevated level of detected cyanide is a statistical outlier and therefore should be treated as a "hot spot". Sufficient data regarding the extent of contamination is not available. Therefore further investigation is recommended in this area to adequately assess the concentration and distribution of cyanide at this location.

PAOC 2 - The potential intersection of the route at the south end of the foundry tailings tip will require further investigation. Investigations to date have not uncovered tailings, but further detailed investigation is required to confirm this.

Whilst elevated landfill gases have not been detected from site monitoring, the desk study has indicated the potential for gas production from the foundry tailings tips local to the site, and there remains a potential for such to migrate to the site.

In addition to the requirement for further investigations, the study has indicated requirement for protection of the construction workforce and future site users (including maintenance staff). Measures should include for use of appropriate PPE, and to avoidance of contact with soil and groundwater during construction and maintenance of the road, and mention to potential for elevated ground gases is required in the CDM documentation for the site.