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Dear Travers,

SITE CONTAMINATION STATUS: BUILDINGS 5 & 6, FORMER HOFFMAN BRICKWORKS, 72 – 106 DAWSON STREET, BRUNSWICK VIC

We understand you are further considering the feasibility of re-development of the Buildings 5 & 6 precinct of the former Hoffman Brickworks, located at 72 – 106 Dawson Street, Brunswick VIC. Below you will find discussion of the key elements likely required to facilitate the completion of a Statutory Environmental Audit of the site, including those required to support a Clean-up to the Extent Practicable (CUTEP) submission to EPA.

The extent of the site is shown in **Figure 1** below.

Figure 1: Site extent (source: NearMap)

1 Existing Site Contamination Condition

The site includes a former brick pressing shed (Building 5) and a former steam engine house (Building 6). A grinding shed (building 6A) was previously located immediately north of Building 6 and east of Building 5. The shed was demolished in 2000. Building 5 comprises two storeys with concrete floors and includes a number of brick presses and associated pits and sumps. Building 6 is one storey with a concrete floor and extensive subsurface brick pits and foundations. Both buildings are in relatively poor structural condition and are currently vacant.

Compass Environmental completed preliminary investigations in accessible areas of the site in 2010. The assessment showed widespread contamination by petroleum and polyaromatic hydrocarbons within the fill and the underlying natural soils. These impacts were likely to be sourced from brick manufacturing operations, including oil leaks from brick presses and associated sumps, and disposal of contaminated waste waters with oils and diesel into a former pit beneath Building 6A.

During drilling contaminated perched water and free oil (NAPL, or non-aqueous phase liquid) was observed at several locations. The NAPL present in the fill underlying the site, which includes a DNAPL (dense NAPL), poses a high risk to the underlying groundwater. The NAPL represents an ongoing source of groundwater impacts. The remaining DNAPL reservoir within the fill is expected to continue to slowly migrate downwards unless it is removed.

Compass Environmental completed further groundwater investigation surrounding the site in 2016, which demonstrated limited migration of impacts off-site.

In addition to the petroleum hydrocarbon and polyaromatic hydrocarbon impacts, the fill was found to be impacted by various metals, at concentrations exceeding levels for high-density residential land use.

2 Remedial Requirements to Obtain Statement of Environmental Audit

An environmental audit is defined in terms of a "… total assessment of the nature and extent of harm or detriment caused to … any beneficial use made of any segment of the environment …" (EPA Act 1970). In other words, an Auditor is required to consider whether the condition of the relevant segment of the environment is or is potentially detrimental to any beneficial use of that segment (that is, the site) or may have the potential to affect offsite beneficial uses (e.g. groundwater or vapour pollution that poses a risk offsite). All elements forming part of the site must be considered when completing an environmental audit (EPA 2014a).

In forming an opinion, the Auditor must consider any relevant legislation and guidelines. In-situ retention of any contamination must comply with the requirements for protection of human health and the environment, and not lead to migration of contamination that leads to unacceptable contamination of other media. Further, the Groundwater SEPP requires that "*Where non-aqueous phase liquid is present in a aquifer, it must be removed unless the Authority is satisfied that there is no unacceptable risk posed to any beneficial use by the non-aqueous phase liquid*".

EPA Publication 840.1 (EPA 2014b) states that "*Groundwater should be cleaned up such that the protection of beneficial uses (existing and potential) is restored. In some cases this will not be possible or feasible, however, in all cases polluted groundwater must be cleaned up to the extent practicable ... The removal or control of the source is a necessary first step in the cleanup or management of polluted groundwater... Where complete source removal is impracticable, the source must be removed to the extent practicable and treatment/control measures must be implemented …*".

Given the presence of NAPL and the groundwater pollution extending off-site, the determination that cleanup to the extent practicable (CUTEP) on-site and off-site has been achieved will need to be made by the EPA. The Environmental Audit will not be able to be satisfactorily completed until the CUTEP is determined.

The remedial works that are likely to be required to obtain CUTEP and a Statement of Environmental Audit for the site, based on the risk assessment undertaken, relevant legislation and EPA Guidelines, include:

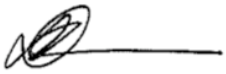
- Removal of subsurface pits and associated contaminated soils. It is noted that there is high potential for pits, potentially filled with residual oils, to be present beneath the current concrete slab (given the large number of refusals on subsurface structures during the completed assessment). All concrete slabs will need to be removed to ensure that all underlying soils can be inspected for buried subsurface structures.
    - The subsurface pits represent primary sources of contamination and as such need to be removed.
- Removal of NAPL present in the fill and underlying soils to the extent practicable.
    - Groundwater SEPP requires that NAPL be removed.
    - High risk of continued downward migration and impact on the underlying groundwater. This forms part of the overall requirement to clean up sources of groundwater pollution to the extent practicable.
    - High risk of seepage into the basement of the adjacent residential development. The NAPL may pose aesthetic and human health risks to off-site receptors.
    - Vapour intrusion risk, however it is noted that vapour risk could be managed by installing a vapour mitigation system beneath the future buildings.
- Clean up of NAPL and dissolved groundwater contamination within the aquifer to the extent practicable.
    - Groundwater SEPP requires that NAPL be removed.
    - High risk of continued impact to the beneficial uses of groundwater on and off-site, as NAPL provides a secondary source of groundwater impacts.
- Installation of a vapour mitigation system to control on-site vapour intrusion risk associated with any residual contamination.
    - The contaminants identified in the underlying fill and natural soils, including NAPL, pose potential unacceptable vapour risk under the proposed development.
    - This management strategy would address vapour intrusion to on-site buildings only. It would not address other risks posed by the identified pollution.
- Full coverage of the site by a building concrete slab.
    - Required to limit potential for direct exposure by human and ecological receptors to residual contamination.
    - Required to limit risk of infiltration through residual contaminated soils.

It is noted that the contamination profile of the site is not fully understood, given the significant access constraints preventing proper investigation. Completion of investigation and remediation to support the CUTEP and Audit process will not be possible until after building demolition. Further, the outcome of future remedial works, the final contamination status of the site post-remediation, and the associated management requirements for the final development are unknown at this stage.

The development will likely be constrained to some degree due to the contamination status of the site, with the requirements for remediation and management likely to define the final built form.

I trust this information assists. Please do not hesitate to call me if you require any further information.

For and on behalf of
COMPASS ENVIRONMENTAL PTY LTD



Damon Scoffern
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