

## **ANNEXURE 9**

**Phase 1 Contamination  
and  
Acid Sulphate Soils Assessment**  
  
**prepared by**  
  
**Coffey Services Australia Pty Ltd**

8 May 2017

Our ref: 754-WOLEN205147-L01 Rev1

Manildra Group Pty Ltd  
PO BOX 738  
NOWRA NSW 2541

Attention: Brian Hanley

Dear Brian

**Phase 1 Contamination and Acid Sulfate Soil Assessment  
Boiler House Modifications, Bolong Road, Bomaderry**

## **1. Introduction**

Manildra Group Pty Ltd (Manildra) intend to undertake further modification of their application to the NSW Department of Planning and Environment Project Approval for the Shoalhaven Starches Expansion Project. The modification includes the addition of a bag house to the western side of the boiler house building with limited new surface structures and the replacement of a fan, ducting and exhaust stack on the eastern side of the building which will require some piling and excavation. Other modifications are to take place within or on top of the structure but all of these will be within the upper floors of the boiler house. Coffey has previously undertaken similar assessments of areas immediately adjoining the site.

Cowman Stoddart is acting on behalf of Manildra in submitting the modification request in relation to an existing Project Approval to the NSW Department of Planning and Environment (DPE). A Phase 1 Contamination Assessment and Acid Sulfate Soils assessment will need to be submitted as supporting documentation to fulfil DPE's requirements for the environmental assessment in relation to this modification proposal.

The objective of the work was to:

- Assess the potential for acid sulfate soils to be present in the area of the proposed works within the anticipated depth of disturbance with recommendations on the need for management;
- Assess the likelihood for contamination to exist on the site from past or present activities in context of the continuing site use as an industrial processing facility, and provide guidance on additional assessment / management (if required);

This work was carried out as per the relevant sections of our proposal (Ref: WOLEN205147-P01, dated 20 April 2017).

Figure 1 below shows the approximate location of the ground level Modification Sites (red) and the Boiler House building (blue). We understand that the extent of ground disturbance for these modifications is likely to be relatively small and only for some possible foundations if founding on the surface pavement is not adequate. The footprint of the proposed Flour Mill B (green) has been the subject of previous geotechnical and environmental investigations by Coffey. Other additions/modifications are proposed in the central part of the boiler house, but these are all understood to be above ground and not involve any ground disturbance



**Figure 1:** Aerial photo showing approximate location of subject site (Source: Google Earth Pro)

## 2. Scope of work

Coffey Services Australia Pty Ltd (Coffey) undertook the following scope of work:

- Review of previous environmental reports held by Coffey.
- Discussing the site history with persons familiar with the history of the site.
- A site walkover to visually assess potential sources of contamination, observe surrounding land uses, topography, drainage, nearby sensitive environments to confirm the findings from previous reports and assess any major changes to site conditions since our last report.
- Preparation of this letter report, drawing upon information within recent reports prepared adjacent to the site.

### **3. Previous reports**

Coffey has carried out previous geotechnical and environmental reports in this general area. The most recent environmental report (Ref: ENAUWOLL04319AA-R01, dated 10 October 2016) was carried out for the planned Flour Mill B. The scope of works included a site history review (including review of previous reports). This previous report is directly relevant to this site and should be read in conjunction with this letter.

The site history information presented in the 2016 Coffey report is considered relevant to the Site. The general area had a history of industrial use. Between 1949 and late 1960's the area was occupied by a factory producing cheese, gluten and a drink product. From the late 1960's onward the site was occupied by Manildra and used for the production of wheat, starch, gluten and later ethanol. Earlier site plans reviewed within a summarised 2008 Coffey preliminary environmental site assessment (ref. ENVIWOLL00111AA-R02) indicate that the Boiler House has been in its current location since at least 1977.

Intrusive assessment works have been carried out since 2007 to the east of the boiler house and has been reported in the following (see references for detailed list):

- 2007 - Preliminary Contamination Assessment, Proposed Starches Product Dryer Manildra, Bomaderry, NSW
- 2008 - Preliminary Environmental Site Assessment and Geotechnical Investigation, Proposed Ethanol Expansion, Shoalhaven Starches Plant, Bolong Road, Bomaderry, NSW
- 2014 - Geotechnical Investigation and Preliminary Environmental Assessment, Proposed New Silos, Bomaderry, NSW

These assessments have identified fill material at depths between 0.5m and 2.5m, soil sampling has also been conducted analysing the material for potential contaminants. Selected samples were analysed for total recoverable hydrocarbons, benzene, toluene, ethyl-benzene, xylene, metals, pesticides, polycyclic aromatic hydrocarbons and polychlorinated biphenyls. No contamination was identified in any of the sampling locations above the adopted criteria for industrial land use at the time.

The most recent assessment (Coffey, 2016) to the east of the boiler did not directly identify contamination, but due to the history of industrial activities at the site and shallow investigations, the report recommended that if evidence of contamination is identified during construction stages, a suitably qualified environmental practitioner should be engaged to assess the potential for risk to human health or environment and provide advice on proper management. Soil assessment would also be required for any excess construction spoil requiring offsite disposal or reuse.

A review of acid sulfate soil potential was also conducted as part of this previous investigation which identified the site was in an area of "low probability" of the occurrence of acid sulfate soils. Based upon previous sampling undertaken, it was concluded that acid sulfate soils could be encountered within alluvial soils underlying the fill materials at depths greater than 3m. The assessment recommended that should the proposed development involve the excavation of soils from depths greater than 3m at the site and/or dewatering that could result in a drop in the water table then an acid sulfate soil management plan (ASSMP) should be developed and actioned.

### **4. Site walkover**

A site walkover for this assessment was undertaken by a Coffey environmental scientist on 24 April 2017. At the time we also spoke to a Manildra employee familiar with the site and the planned works, Mr Mark West. The site was found to broadly match the descriptions and photos found in previous reports.

At the time of the walkover the Boiler House was in operation with active equipment observed in the eastern modification site. This equipment primarily comprised fans, ducting and exhaust stacks which are to be replaced as part of the modification works. A chemical storage bund was observed in the western modification area, this chemical storage bund was visibly in good condition with no evidence of damage or leaks and is intended to remain unmodified during the planned works. The chemicals in the bund, were identified by external labels as Nalco 780 (liquid) and NexGuard 22310 (liquid). Both products are used to dose the boiler water as a part of standard operations on the site based upon the description provided by Mr Mark West. A review of safety data sheets for these suggest that Nalco 780 contains sodium bisulfite, which can be harmful. NexGuard 22310 is not described as hazardous, but can cause irritations.

The eastern modification site was surrounded by the Boiler House and associated structures to the west and south, the train line to the north and open space followed by storage silos to the east. Ground surfaces were generally moderate to good condition hardstand with a stormwater drain identified adjacent to the modification site. This stormwater drain is connected to the sites drainage system, with stormwater transferred to Manildra's wastewater treatment plant for treatment. On the ground floor of the Boiler House building adjacent to the eastern modification site were two full pallets containing 20kg bags of Nalco 156C PULV which are used as an anti-scalant within the boilers. The bags were wrapped and did not appear they had been used. A review of safety data sheets for these suggest that this product contains hazardous substances: copper oxychloride and magnesium oxide. Also within this area were wheelbarrows being used for the collection of ash from the wood chip fired boiler no. 2.

The western modification site was surrounded by the Boiler House and associated structures to the east, north and south. To the west was a road way and on the opposite side of this was a large plant structure. All ground surfaces were generally moderate to good condition hardstand particularly in areas where planned modification works will contact the surface.

The Boiler Superintendent (Mr John Burling) was also questioned as to what fuels had been historically used to fire the boilers. He indicated that LPG, natural gas, coal and woodchip were the only fuels that had been used on the site.

Photos of the general site are shown below:



Photo 1: Western modification site showing chemical storage bund and surrounding structures.





Photo 2: Eastern modification site, showing fans and base of stacks, stormwater drain at the lower right of the photo

## 5. Conclusions

Based upon the results of the site walkover and review of previous reports we consider the potential for widespread contamination of the site to be low. Some chemical additives have been stored in the western part of the boiler house used for dosing boiler water. Some components of these can be hazardous. As the site is paved, widespread subsurface contamination is not likely in the case of incidental spillage. These are also stored in a bunded storage area.

Due to the history of industrial activities and indirect shallow investigations we recommend that precautions be taken with any subsurface penetrations, in particular if any are required in the vicinity of the chemical storage bund. Soils should be handled with caution as per requirements of handling the substances that are within the chemical bund as a precaution. If any evidence of contamination is identified during construction stages (e.g. soil discolouration, chemical odour, unusual odour, waste, asbestos containing material, staining etc), then work should cease and a suitably qualified environmental practitioner should be engaged to assess the potential for risk to human health or environment and provide advice on proper management. Soil assessment would also be required for any excess construction spoil generated requiring offsite disposal or reuse.

Where cut to fill balances suggest a net soil excess or if there are geotechnically unsuitable soils, careful soil management is strongly recommended during civil work so that disposal costs can be minimised. For example separation of like fill materials and segregation of fill from natural soils.

Previous reports have also identified the potential for the presence of acid sulfate soils to be located in the vicinity of the proposed upgrade areas. Acid sulfate soils could be encountered within alluvial soils underlying the fill materials. It is recommended that should the proposed development involve the excavation of soils from depths greater than 3m at the site and/or dewatering that could result in a drop in the water table then an acid sulfate soil management plan (ASSMP) should be developed and actioned.

## 6. Limitations

The findings contained in this report are the result of discrete/specific methodologies used in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the ground tested at the time the investigations were carried out. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

This letter should be read in conjunction with the attached sheets titled "Important Information about your Coffey Environmental Report".

## 7. References

- Coffey Geotechnics Pty Ltd (2007). Preliminary Contamination Assessment, Proposed Starches Product Dryer Manildra, Bomaderry, NSW. Report reference GEOTUNAN02584AA-AD. Dated 20 April 2007.
- Coffey Environments Pty Ltd (2008) Preliminary Environmental Site Assessment and Geotechnical Investigation, Proposed Ethanol Expansion, Shoalhaven Starches Plant, Bolong Road, Bomaderry, NSW. Report reference: ENVIWOLL00111AA-R02. Dated 25 June 2008.
- Coffey Geotechnics Pty Ltd (2014). Geotechnical Investigation and Preliminary Environmental Assessment, Proposed New Silos, Bomaderry, NSW. Report reference GEOTWOLL03658AA-AA. Dated 6 August 2014
- Coffey Geotechnics Pty Ltd (2015). Geotechnical Advice and Preliminary Environmental Assessment, New Flour Mill, Bomaderry, NSW. Report reference GEOTWOLL03658AC-AA. Dated 11 February 2015.
- Coffey Services Australia Pty Ltd (2016) Phase 1 Contamination Assessment, Acid Sulfate Soils Investigation and Riverbank Stability Assessment, Proposed Flour Mill B, Shoalhaven Starches site, Bolong Road, Bomaderry. Report Reference ENAUWOLL04319AA-R02. Dated 10 October 2016

We trust the information presented in this letter is suitable for your current requirements. If you have further questions please do not hesitate to contact the undersigned.

For and on behalf of Coffey



**Manuel Fernandez**  
Principal Environmental Engineer

Attachments:

A: Important Information about your Coffey Environmental report

**Attachment A**  
**Important Information about your Coffey**  
**Environmental Report**



# Important information about your **Coffey** Environmental Report

## **Introduction**

This report has been prepared by Coffey for you, as Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

## **Your report has been written for a specific purpose**

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

## **Limitations of the Report**

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Coffey should be kept apprised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statutes and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

## **Interpretation of factual data**

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Coffey would be pleased to assist with any investigation or advice in such circumstances.

### **Recommendations in this report**

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

### **Report for benefit of client**

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

### **Interpretation by other professionals**

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Coffey prepared the report and has familiarity with the site, Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and

Coffey disowns any responsibility for such misinterpretation.

### **Data should not be separated from the report**

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

### **Responsibility**

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.