Hanson Construction Materials

Preliminary (Stage 1) Land Contamination Assessment:

Concept Plan for the redevelopment of Lot 11 DP 558723, Lot 1 DP 400697 and Lot 2 DP 262213, Eastern Creek, NSW.

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

P0601396JR02_v1
October 2006

Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to provide a preliminary assessment of land contamination risk at the subject site in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and Hanson Construction Materials (hereafter known as the Client). That scope of works and services were defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

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Acknowledgements

Survey data and development proposal layout plans have been provided by Hanson Construction Materials.

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All enquiries regarding this project are to be directed to the Project Manager.

Contents

1 Project Scope

Martens & Associates Pty Ltd has prepared this preliminary (Stage 1) land contamination assessment report for Planning Workshop Australia, who are acting on behalf of the development proponent, Hanson Construction Materials Pty Ltd, to form part of a development application for restructuring of existing industrial operations at the subject site (Lot 11 DP 558723, Lot 1 DP 400697 and Lot 2 DP 262213 at Eastern Creek).

The purpose of the assessment is to detail the suitability of the site for the proposed development and to determine if further (Stage 2 – soil sampling and testing) site analysis is required. The assessment does not involve site specific sampling.

The assessment is prepared in accordance with SEPP 55 requirements and those of NSW EPA Contaminated Sites (1998) guidelines for Stage 1 contaminated land assessments.

2 Site Description

2.1 Location and Site Description

The subject site is located on Archbold Road, Eastern Creek, approximately 0.9 km north of Old Wallgrove Road and 1.5 km south of the M4 motorway, within the Blacktown City Council Local Government Area (Figure 1).

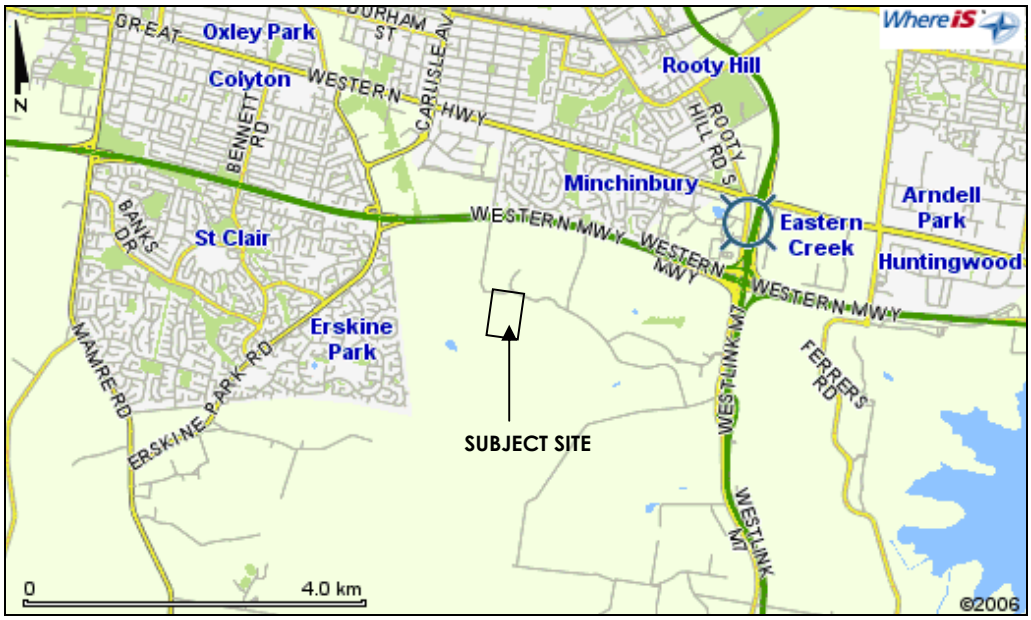

Figure 1: Location of the subject site within its local context.

The site development proposal includes a boundary adjustment to Lot 11 DP 558723 and to include the relevant parts of the adjoining allotments Lot 1 DP 400697 and Lot 2 DP 262213. The new proposed lot is irregular in shape and has an area of approximately 27 hectares (Figure 2). A site plan showing the boundary arrangements is provided as Attachment A.

The site is characterised by mixed industrial operations, predominantly asphalt and concrete plants and stockpiling of mining products. Specific site land uses and surrounding land uses are detailed in Sections 3.3 and 3.2 respectively.

Figure 2: Aerial photograph of the proposed development site.

2.2 Geology

The Penrith Australia 1:100,000 Geological Sheet 9030 (1991) describes the bedrock geology of the Rooty Hill region, including the site, as Bringelly Shale (Wianamatta Group, Liverpool Sub-group) with some sandstone beds and with alluvium gravel, sand, silt and clay buffering Ropes Creek and Eastern Creek.

Sub-surface investigations on-site (completed for a separate site study) revealed Andesite bedrock along the existing haul road adjacent to the discontinued mine. However, country rock in the development area is expected to be shale. We expect depths of natural soil profiles in the study area to be 1.5 – 2.5 m while the depth of fill across the site is highly variable due to large amounts of earthworks and regrading of the site during the past forty years plus. Field investigations were not part of the Stage 1 contamination assessment.

2.3 Soil Profile

The site soil profile is highly variable, in terms of both soil depth and comprising soil types, due to the large amounts of earthworks and regrading (filling) of the site during the past forty years plus. However, the Soil Landscapes of the Penrith 1:100,000 Sheet identifies the site as having soils of the Blacktown soil landscape. More specifically, it describes the dominant soil materials on the upper and mid slopes as in Table 1. Total soil depth is typically < 2 m.

Table 1: Soil profile summary for the site based on Soil Landscapes of the Penrith 1:100,000 Sheet (Bannerman & Hazelton, 1990).

Layer	Thickness of soil layer (m)	Description
bt1	Up to 30 cm	LOAM – friable, dark brown, with moderately pedal structure. Occasionally absent from the soil profile.
bt2	10 – 20 cm	CLAY LOAM – brown, hardsetting, with an apedal massive or weakly pedal structure.
bt3	20 – 50 cm	LIGHT CLAY– brown, mottled, strongly pedal.
bt4	Up to 100 cm	CLAY – light grey, mottled, plastic.

2.4 Groundwater

Based on search results from the NSW Department of Natural Resources (DNR) groundwater bore database, groundwater levels at the site are estimated to be in excess of at least 5 m depth (Figure 3). Given the characteristics of the local soil profile, it is inferred that the water table is likely to be within the underlying shale bedrock.

Sub-surface investigations along the existing haul road adjacent to the discontinued mine to 9.5 m depth (into bedrock) did not encounter groundwater. On this basis we estimate that, where Andesite bedrock occurs, permanent groundwater exists within the bedrock at depth. However, groundwater levels within the study area, where the bedrock is expected to be shale, could be significantly different.

Importantly, local groundwater regimes have been affected by the neighbouring open cut mining operation, where excavation has extended to well below 0 m (AHD). Groundwater has been pumped, for dewatering purposes, from the mine for many years and as a result we expect that local groundwater levels at the development site are in excess of 10 m depth below ground level and won't be impacted by the development proposal. Ephemeral groundwater is likely to collect at the soil/rock interface after periods of substantial or prolonged rainfall.

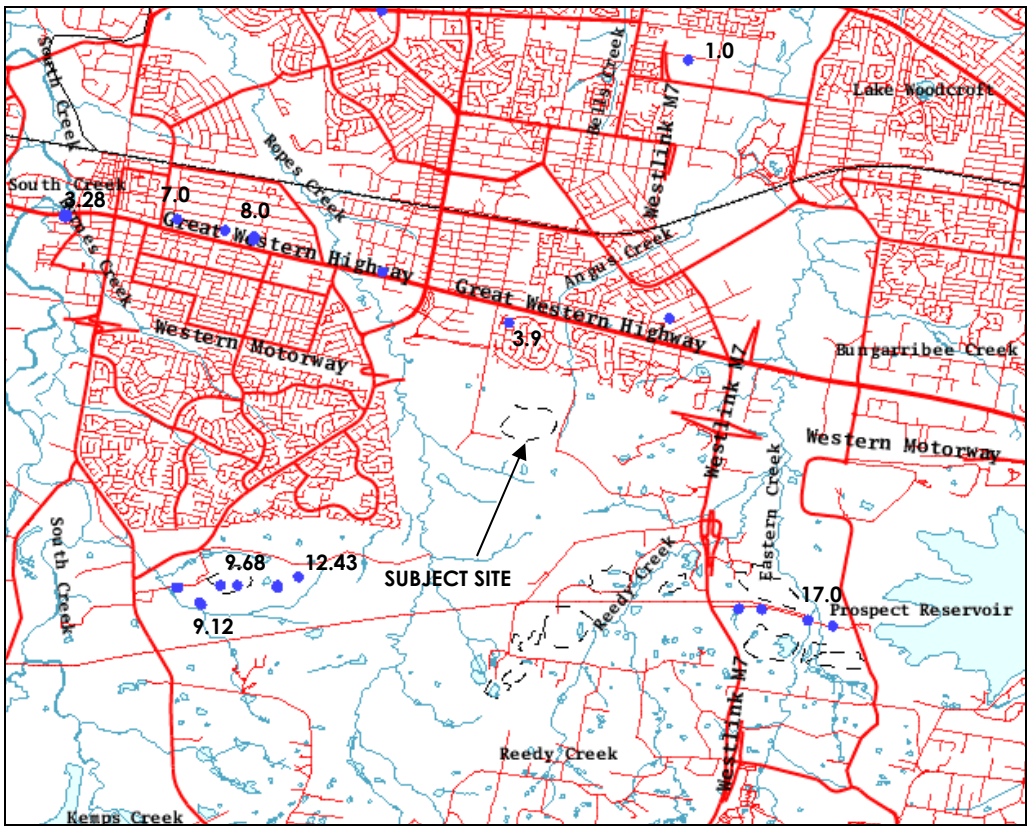

Figure 3: Map of groundwater bores from NSW Natural Resource Atlas. Water table depth, given as metres below ground level, is provided for some bores.

3 Site History Review (Preliminary Investigation)

3.1 Overview

A review of the history of site use and development has been completed using a range of available information sources to form a preliminary assessment of the risk of land contamination resulting from past land uses. Information used includes discussions with the current site owners, Council development application records and historical aerial photography.

3.2 Zoning and Surrounding Land Uses

The site is zoned 'Employment Lands' pursuant to the *State Environmental Planning Policy No. 59 – Central Western Sydney Employment Area* (SEPP 59). The 'employment lands' zoning permits a range of industrial, storage and logistics as well as extractive industries.

Neighbouring land to the north of the site is a recently discontinued quarry operation which has been operating since the 1930's. To the east is presently undeveloped land. To the south-east is undeveloped land that is set to become a commercial distribution centre (approved during June 2005). To the west of the subject site is a corridor of mostly undeveloped rural land providing for electricity transmission lines.

The site is also in close proximity to a major transport distribution network including the M7 and M4 motorway and the Great Western Highway. The nearest residential areas to the site are the suburbs of Minchinbury immediately to the north of the M4 motorway (approximately 1 km north of the site), Erskine Park approximately 1.5 km to the west and Horsley Park to the south.

3.3 Previous Land Uses

According to the current site owner, Hanson Construction Materials Pty Ltd, the operation and use of the site during their ownership period (1956 - 2006) has included the following:

- Premix concrete production and sales;
- Cement storage and storage of cement products;
- A transport logistics depot and workshop;
- Offices;
- Asphalt production and sales;

- Technical laboratories associated with production of concrete and asphalt;
- Concrete recycling operations;
- Aggregates storage and distribution;
- Crushing, screening and blending facilities;
- Heavy vehicle and light vehicle parking and maintenance;
- Weighbridge;
- Bitumen storage; and
- Fuel storage.

3.4 Development Consent History

Development Application (DA) records kept by Council show that the site has also been used intensively for various industrial activities for at least the last thirty years (Table 2). Council DA records extend back until the early 1950's and support the land history provided by the owners.

Table 2: Development Applications for Lot 11 DP 558723, Lot 1 DP 400697 and Lot 2 DP 262213 at Eastern Creek, according to Council records early 1950's to current.

Year	Description	Outcome
1974	Plant control room/ workshop/ amenities/ office building.	Approved
1975	Plant enlargements.	Approved
1977	Turbulent mass drum mix plant.	Approved
1982	Concrete batching plant.	Approved
1984	Office extensions.	Approved
1984	Extensions to concrete batching plant.	Withdrawn
1995	Rezone to allow asphalt plant.	Not recorded
1996	Silo relocation.	Refused
1996	Silo.	Refused
1996	Replacement dryer/ bag house.	Declined
1997	Factory alterations and additions.	Cancelled

1998	Upgrading existing refuelling facilities.	Approved
1998	Factory alterations and additions.	Approved
2006	Proposed engineering landfill and waste management facility.	Yet to be determined by Ministerial consent
2006	Asphalt emulsion plant/ materials storage/ transfer depot/ concrete batching.	Yet to be determined by Ministerial consent

3.5 Historical Aerial Photograph Analysis

Historical aerial photographs covering the site were reviewed in order to investigate the history of land use on the site. Aerial photographs taken during 1947, 1956, 1965, 1970, 1986, 1998 and 2005 were reviewed and the following sequence of site modifications was observed:

- 1947 – The site is close to completely cleared and appears to be grazing pastures with extensive crop fields. There is a large expanse of crop fields north-east of the site and otherwise the local area is characterised by farm land, particularly grazing pastures and some crop fields.

- 1956 – Quarrying operations on the land just north of the subject site have begun and appears well underway. The subject site is characterised by bare ground surface and a processing plant and office and/or workshop buildings. The site is most likely used for vehicle movements and aggregate stockpiling and distribution, and possibly for on-site refuelling. The surrounding local area remains dominated by agricultural land use.

- 1965 – The quarry operation north of the site has continued to expand and the subject site is being used more intensively, predominantly for aggregate stockpiling and processing and/or distribution. A processing plant (most probably for aggregate) is the main site feature. The surrounding local area is still mostly agricultural land use but several industrial land uses (as suggested by warehouses and site layout) have been established. These properties are generally more than 1 km from the site and are not considered to affect the site in terms of contamination.

- 1970 – The nature of site use has not changed significantly since 1965 but the site area used for operations has expanded slightly at the southern boundary and a small dam appears to have been created near the south-eastern corner of the property. The surrounding local area is also relatively unchanged.

- 1986 – The nature of site use does not appear to have changed significantly but site operations area has increased further, in this case to include a dam at the south-western corner of the property, and the site has been further developed, as indicated by an increased number of buildings (although mostly small sheds). The surrounding local area has been much more developed since 1970, especially to the north of the site where large residential areas have been established. Land immediately south of the site remains undeveloped. Nearby development activities are not likely to have caused any site contamination.

- 1998 – The nature of site use does not appear to have changed significantly since 1965. It continues to be used for aggregate stockpiling and processing and/or distribution with a processing plant being the main site feature. The surrounding local area has been developed greatly since 1986, especially to the north and west of the site in the form of large residential areas as well as parcels of industrial land. Land immediately south of the site remains generally undeveloped.

- 2005 - The site layout has changed slightly but otherwise the site is as it was in 1998.

3.6 Site History Interpretation

The results of the site history review reveal that the site was developed during 1956 and has been used relatively intensively for a range of potentially contaminating industrial activities for the last half century. We conclude that the site is likely to host a range of contaminants and further site assessment (soil sampling and testing) is recommended to confirm the presence of and define the extent of any contamination. A summary of potentially contaminated areas and associated contaminants is provided as Table 3 and the nominated areas are illustrated on the site plan (Attachment A). The summary is based on the main potential sources of contamination identified by the preliminary assessment and site contamination is not necessarily limited to only the specified areas.

Table 3: Summary of potential site contamination, based on the findings of the preliminary site investigation.

Area (shown on site plan)	Source Activities	Potential Contaminants
A	Stormwater detention basins: Any site contamination could be found amongst the sediment at the bottom of these basins since they are the receptacle for site stormwater surface runoff.	The stormwater detention basins are potentially subject to any and all of the contaminants potentially released on-site: Heavy metals, hydrocarbons, solvents, acids.
B	Asphalt production and bitumen storage areas.	Hydrocarbons and heavy metals.
C	Workshops, offices, and technical laboratories associated with production of asphalt and concrete.	Solvents, acids, other laboratory chemicals, and asbestos used as construction material.
D	Abandoned and derelict cement trucks.	Hydrocarbons from vehicle fuels, oils and hydraulic fluids. Heavy metals, metal oxides and solvents from the decomposition of vehicle bodies.
E	Concrete production plant and concrete recycling plant.	Chemical admixtures used in the concrete production process and hydrocarbons from oils associated with the machinery.
F	This area is adjacent to and downslope of a mechanical workshop, fuel storage and refuelling area and truck washing facility.	Heavy metals, hydrocarbons, and acids resulting from spills and leaks and subject to minor transport.
G	Previously agricultural land. Also, this land is close to areas of industrial activities at the site.	Heavy metals, hydrocarbons, organochlorines and organophosphates.

4 Conclusions

A Stage 1 contamination assessment has been completed in accordance with SEPP 55 requirements and those of NSW EPA Contaminated Sites (1998) guidelines for Stage 1 contaminated land assessments to form part of a development application documentation for restructuring of existing industrial operations at the subject site (Lot 11 DP 558723, Lot 1 DP 400697 and Lot 2 DP 262213 at Eastern Creek). Investigations included a review of the history of site use and development based on discussions with the current site owners, planning policy review, Council development application records and historical aerial photography.

On the basis of Stage 1 investigation results, further site assessment (Stage 2 - soil sampling and testing) is recommended to characterise site contamination and determine the need for site remediation. Areas considered to require Stage 2 assessment are shown on the site plan (Attachment A) and are based on the main potential sources of contamination identified by the preliminary assessment. Site contamination is not necessarily limited to only the specified areas. Any excavated material which is removed off-site will require a waste classification.

Based on Stage 1 investigation results it is our view that the site is likely to be suitable for the proposed development, following any required remediation works, because the nature of land use and activities associated with the proposed development is similar to those current and historical. We recommend that the Stage 2 sampling program and preparation of the remediation action plan (RAP) be undertaken prior to issuing of the construction certificate.

5 References

Bannerman, S.M. and Hazelton, P.A. 1990. *Soil landscapes of the Penrith 1:100,000 Sheet*. Soil Conservation Service of NSW, Sydney.

Herbert, C. (Ed), 1991. Penrith 1:100,000 Geological Sheet 9030. New South Wales Geological Survey, Sydney.

NSW EPA (1998) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.*

NSW Department of Urban Affairs and Planning & NSW EPA (1998) *Managing Land Contamination: Planing Guidelines – SEPP 55: Remediation of Land.*

NSW Department of Natural Resources (2005), *NSW Natural Resource Atlas*, CANRI, viewed 25 September 2006, http://waterinfo.nsw.gov.au/gw/index.html

NSW Department of Urban Affairs and Planning & NSW EPA, *SEPP 59: Central Western Sydney Employment Area.*

6 Attachment A – Site Plan

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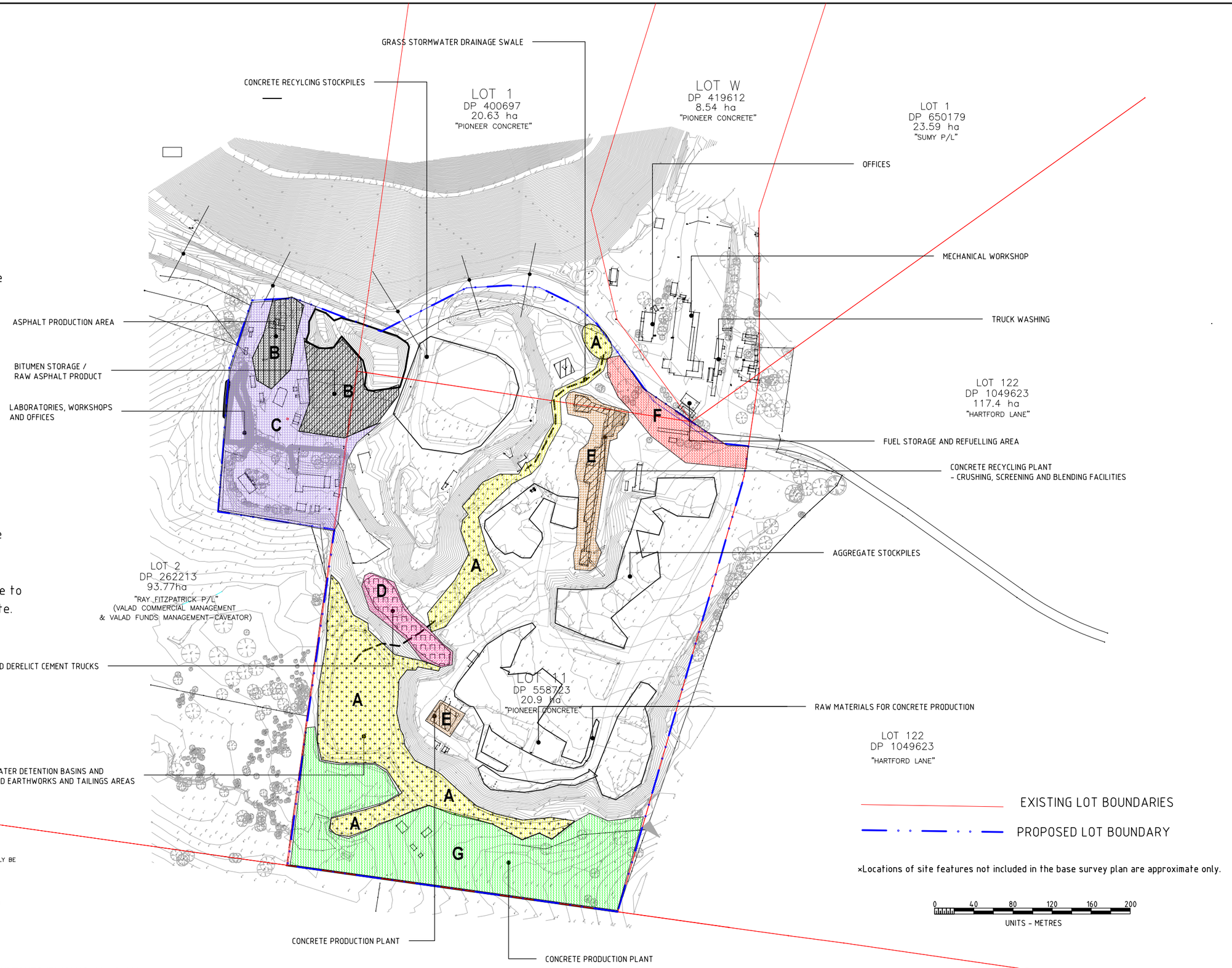
S

AREAS REQUIRING SAMPLING AND TESTING (STAGE 2 ASSESSMENT)

- **A** Stormwater detention basins, drainage swales and assorted tailings areas.
- **B** Asphalt production and bitumen storage areas.
- **C** Workshops, offices and laboratories.
- **D** Abandoned and derelict cement trucks.
- **E** Concrete production plant and concrete recycling plant.
- **F** Downslope of workshops, fuel storage and refuelling area and truck washing.
- **G** Previously agricultural land. Also close to areas of industrial activities at the site.



EXISTING LOT BOUNDARIES

PROPOSED LOT BOUNDARY

×Locations of site features not included in the base survey plan are approximate only.

0 40 80 120 160 200

UNITS - METRES

NOTES

- BOUNDARY DIMENSIONS AND AREAS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE AT LPI, NSW AND ARE SUBJECT TO FINAL SURVEY.
- CONTOURS IF SHOWN ARE AN INDICATION OF THE TOPOGRAPHY AND SHOULD ONLY BE USED FOR PLANNING PURPOSES. IF DETAILED DESIGN IS TO BE UNDERTAKEN, SPOT LEVELS SHOULD BE USED.
- DO NOT SCALE OFF THIS PLAN – RELATIONSHIP OF IMPROVEMENTS AND DETAIL TO BOUNDARIES IS DIAGRAMMATIC AND IF CRITICAL SHOULD BE CONFIRMED BY A BOUNDARY SURVEY.
- NO SERVICES SEARCH HAS BEEN UNDERTAKEN. SERVICES SHOWN ARE BASED ON SURFACE INDICATORS EVIDENT AT THE DATE OF SURVEY DURING FIELD SURVEY & CHARTED AS A GUIDE TO THE POSITION & NATURE OF THE SERVICE.
- THE POSITIONS OF ANY UNDERGROUND SERVICES, INCLUDING FIBRE OPTIC CABLE, HAVE NOT BEEN DETERMINED.
- NO "DIAL BEFORE YOU DIG" SEARCH HAS BEEN UNDERTAKEN. CONTACT "DIAL BEFORE YOU DIG" ON Ph: 1100 PRIOR TO COMMENCING WORK ON SITE.

ORIGINAL SURVEY PLAN BY LOVEGROVE OXLEY CONSULTANTS (PLAN NO. 68579, 2005).

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THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY
All measurements in m unless otherwise specified.

CLIENT/ PROJECT: HANSON AUSTRALIA PTY LTD/ PRELIMINARY CONTAMINATION ASSESSMENT

TITLE: SITE PLAN SHOWING AREAS OF POTENTIAL CONTAMINATION:

PROJECT MANAGER: DR DANIEL MARTENS

DRAWING NUMBER: P0601396JD14__V1

DESIGNED:	MT
DRAWN:	MT
REVIEWED:	DM
DATUM:	AHD
HORIZONTAL RATIO:	1:2000 @ A1 1:4000 @ A3
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