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Courier		
By Hand		
Contact:		J. Fulton
Our Ref:		P1404242JC02V01.docx
Pages:		7 + ATTACHMENT
cc.		

29.10.2015

Precise Planning

Attn: Jeff Bulfin
By email

Dear Jeff,

RE: ONSITE WASTEWATER MANAGEMENT ASSESSMENT – PROPOSED RESOURCE RECOVERY FACILTIY AT 25 MARTIN ROAD, BADGERYS CREEK, NSW

1. BACKGROUND

Martens & Associates have prepared this wastewater options assessment to form an addendum to the *Environmental Impact Statement – 25 Martin Road, Badgerys Creek* (EIS) previously issued by Precise Planning (March 2015, ref: 1305) for the erection and operation of a Resource Recovery Facility (RRF) at Lot 1 DP 611519, also known as 25 Martin Road, Badgerys Creek, NSW.

The purpose of this assessment is to describe wastewater generation rates for the development and to demonstrate the ability of the site to be serviced by an onsite sewage management system and provide preliminary details of this system. Detailed design of the preferred on-site wastewater management system shall be completed at construction certificate stage of the development.

Options considered (Section 5) in the study include:

- Connection to Sydney Water reticulated sewer;
- Collection and off-site pump-out / disposal of wastewater; and
- On-site wastewater treatment and effluent re-use.

2. DEVELOPMENT PROPOSAL AND COMPLIANCE REQUIREMENTS

We understand that development of the RRF will result in construction of:

- Ancillary structures, including amenities shed (lunch room and toilet), storage shed, canopy, storage bays, weighbridge and office.
- Civil and landscaping works, including construction of drainage swales, on-site detention basin and bio-remediation basin.

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A conceptual site plan showing the proposed site layout is appended to this document.

As outlined in email from Liverpool City Council (LCC) directed to Precise Planning (dated 15th Sept 2015), the wastewater management system must demonstrate compliance with the following documents:

- Local Government (General) Regulation (2005).
- Department of Local Government (DLG et al.) (1998), *Environment & Health Protection Guidelines – On-site Sewage Management for Single Households*.
- Australian Standard 1546.1 – On-Site Domestic Wastewater Treatment Units Part 1 – Septic Tanks (AS1546.1, 2008).
- Australian Standard1547 – On-site Domestic Wastewater Management (AS1547, 2012).
- LCC Development and Controls Plan (DCP), Part 1, Section 16 – On Site Sewage Disposal (2008).

3. LOCATION AND DESCRIPTION

The subject is located at 25 Martin Road Badgerys Creek, NSW and is described as Lot 1 DP 611519. The site is within the LCC LGA (Figure 1).

The site is bounded by an existing agricultural site to the north, believed to include a working piggery and a vacant parcel of land to the south. The site is bounded by Martin Road to the east and Lawson Road to the west.

Figure 1: Location of subject site.

The site has an area of approximately 2 ha. Inspection on 29.09.2014 reveals the site is currently occupied by a cleared area extending across the eastern half which is currently utilised for stockpiling various materials. Materials consist of soils and recycled building materials such as timber, steel, concrete, *etc*. The western part of the site is revegetated and includes a 2 m (approximately) high embankment. Several small trees (up to 3 m in height) and a number of larger trees were noted in the western part of the site. A second

embankment adjacent to the western site boundary was observed to be approximately 0.5 m high at the northern end and approximately 2 m high at the southern end. The site was otherwise undeveloped at the time of inspection.

4. WASTEWATER GENERATION RATES

According to the previously issued EIS, it is expected that a maximum of two staff will be onsite during hours of operation (Monday to Friday 7am – 5pm, Saturday 8am – 2pm).

AS1547 (2012) Table H4 stipulates that hydraulic load generation for a 'Rural factory' connected to reticulated water supply, the wastewater generation rate is 50L/person/day (comprising blackwater and greywater). This would suggest a total of 100L/day for the site.

DLG et al. *(1998)* requires any wastewater generation calculation to consider a minimum of five persons on site. Subsequently, a design wastewater generation rate of 250L/day for the site is assumed.

5. WASTEWATER MANAGEMENT OPTIONS

This assessment considered three wastewater management options for the proposed development:

- Pump to Sydney Water reticulated sewer;
- Collection and storage of site wastewater with periodic pump-out; and
- On-site collection, treatment and non-potable re-use of wastewater.

Each of the options is discussed briefly as follows.

5.1 Pump to Sydney Water reticulated sewer

This option involves the collection of all site wastewater to a single pump station and transfer of wastewater to the nearest Sydney Water reticulated sewer. General comments are as follows:

- At this stage, Sydney Water has not indicated that it is able to accommodate the proposed development.
- It is <u>not</u> anticipated that Sydney Water sewer mains will be constructed in the area.
- The nearest sewer mains to the site are located along Elizabeth Drive, approximately 250m north of the site.

It has been concluded that the pump to sewer option is not feasible for the site due to the relatively low expected wastewater generation rate and expense to construct a connection along Lawson Road or Martin Road. It is therefore not considered further in this assessment.

5.2 Pump-Out

This option involves the collection and storage of generated wastewater in a dedicated storage tank which is pumped out weekly. An assessment of the site topography and proposed layout shows that it is possible to drain all wastewater generating fixtures to a storage tank located adjacent to the western boundary of the site (see Martens planset P1404242PS00A0-Rev. A).

The key advantages of such a system are that the wastewater generated on the site would be managed (i.e. primary treated and then disposed off-site) and upfront capital costs of such a system are generally lower than for an on-site wastewater treatment and re-use system. The key disadvantages for this type of system are that long-term pump-out costs are likely to be higher than for pump to sewer or on-site wastewater treatment and re-use scheme.

5.3 On-Site Treatment and Re-use

This option involves the collection of all site wastewater to an on-site sewage treatment plant (STP) with treated effluent re-used on-site through irrigation.

Key advantages to this scheme would be the ongoing benefit of reduced potable water usage. The long term system maintenance / operation cost are likely to be less than a pump-out system.

However, these benefits are outweighed by the disadvantages of this scheme, namely: need for a dedicated effluent irrigation area; much higher initial cost to construct, increased regulatory and compliance requirements and costs, increased risk associated with possible system failure and the need for required maintenance and monitoring of the on-site wastewater management system. Critically, the site is subject to a relatively low and likely infrequent wastewater generation rate which may reduce onsite treatment systems' performance and increase its relative cost.

5.4 Option Selection

Based on preliminary assessment completed, it is recommended that Option 2 – "Pump-Out", be adopted at the site for the following reasons:

- A Sydney Water sewer connection is not available in Lawson Road or Martin Road.
- On site management is not considered feasible due to limited space on site and the relatively low and infrequent proposed wastewater load and high capital cost.

6. PROPOSED SITE WASTEWATER MANAGEMENT

6.1 System Components

DLG et al. *(1998)* stipulates a septic tank must have a septic tank capacity of minimum 2300L (1550 + 150 x min 5 persons) and a collection well component capacity of minimum 5250L (150 x 7 x min. 5 persons) size collection well with weekly removal for WC and all other wastes.

The 5250L collection tank could accommodate 30 days of site wastewater generation, which is an acceptable level of redundancy considering the intention for the well to be emptied weekly.

AS1546.1 (2008) requires a septic tank with minimum operational capacity of 3000L to accommodate 1 to 5 persons generating greywater and blackwater.

It is proposed that a 8250L septic tank with a 5250L collection well component and a 3000L septic tank component be constructed near the access driveway from Lawson Road onto the site (see Martens planset P1404242PS00A0 Rev A for detail). All wastewater producing fixtures are to be connected to the tank in accordance with AS1547 (2012) and AS3500 (2003).

6.2 System Operation and Maintenance

Pump out of the collection well is to be scheduled on a weekly basis and is to be undertaken by a licensed contractor. To ensure system operation, emergency level switches actuating at 50%, 75% and 100% of capacity are to be provided with an indicator at the tank and an audible and visible alarm for 100% capactiy to ensure appropriate system pump out occurs.

Periodic maintenance of the proposed system shall be undertaken once every three years and shall include inspection and monitoring of system mains and structures, system storage tank, float valves and water level alarm systems and pump-out transfer main and Camlock fitting. The septic tank component's sludge accumulation is to be monitored with sludge pumped out once every three years or as required. It is recommended that weekly pump-out volumes and site occupancy rates be recorded to allow ongoing assessment of on-site wastewater generation rates.

6.3 Detailed Design

All system components are to be designed by a suitably qualified person at the Section 68a application.

If you require any further information, please do not hesitate to contact the writer.

For and on behalf of

MARTENS & ASSOCIATES PTY LTD

JEFF FULTON
BSc
Project Manager / Senior Engineer

7. REFERENCES

Local Government (General) Regulation (2005)

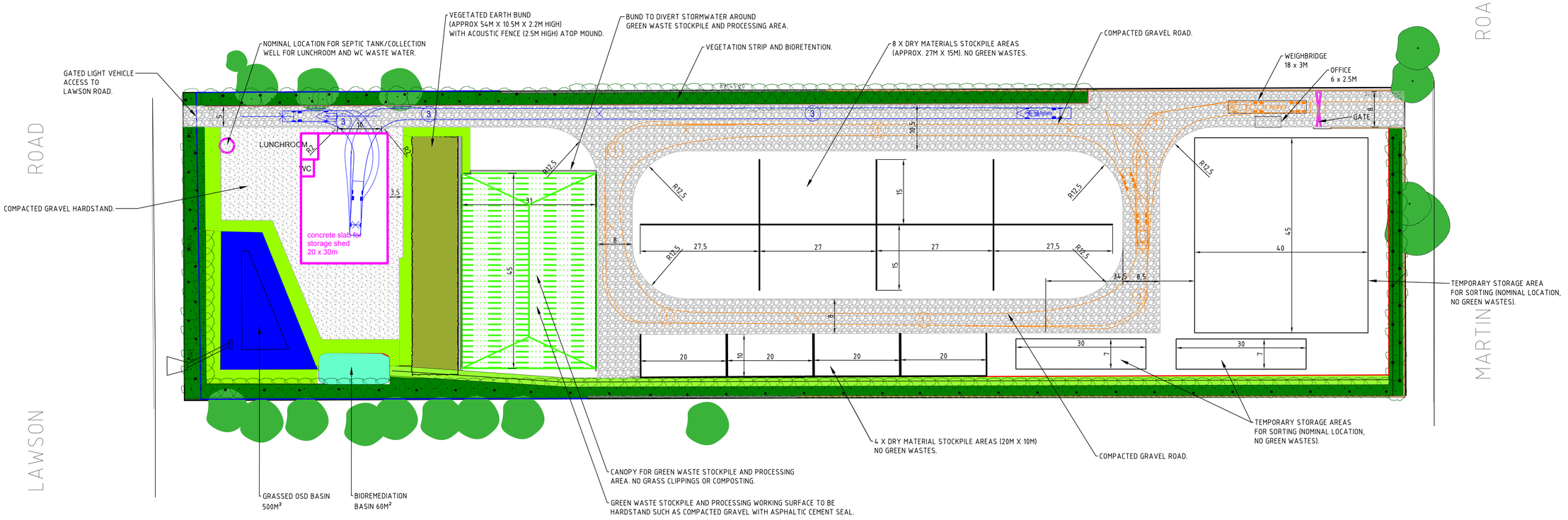
Department of Local Government et al., (1998,) *Environment & Health Protection Guidelines – On-site Sewage Management for Single Households*

Australian Standard 1546.1 (AS1546.1, 2008) – *On-Site Domestic Wastewater Treatment Units Part 1 – Septic Tanks*.

Australian Standard 1547 (AS1547, 2012) – *On-site Domestic Wastewater Management*

LCC Development and Controls Plan (2008), Part 1, Section 16 – *On Site Sewage Disposal*

ATTACHMENT A – CONCEPTUAL SITE LAYOUT (MARTENS PLANSET P1404242PS00A0 - REV A)



NOTES:
- INTERNAL ROAD TO BE UNSEALED COMPACTED GRAVEL (DGB ROAD BASE OR RECYCLED ASPHALT BASE).
- FOR COMPLETE LANDSCAPING DETAIL REFER TO HLS PTY LTD DWG 09129 ISSUE P2 SHEET L01.
- SWEPT PATH ANALYSIS CONDUCTED FOR AUSTRALIAN STANDARDS DESIGN VEHICLES ARTICULATED (AV) AND HEAVY RIGID.
- FINAL STORMWATER QUANTITY AND QUALITY MANAGEMENT SUBJECT TO LAYOUT APPROVAL.
- GREEN WASTE STOCKPILE AND PROCESSING AREA WORKING SURFACE TO BE HARDSTAND SUCH AS COMPACTED GRAVEL WITH ASPHALTIC CEMENT SEAL BASE.

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	FINAL	14.10.2015	BL	BL	JF	JF

SCALE
0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
NA	NA	JF

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CLIENT
PRECISE PLANNING

PROJECT NAME/PLANSET TITLE
ENV. ASSESSMENT - BADGERYS CREEK
SKETCH DRAWINGS
25 MARTIN ROAD
BADGERYS CREEK NSW

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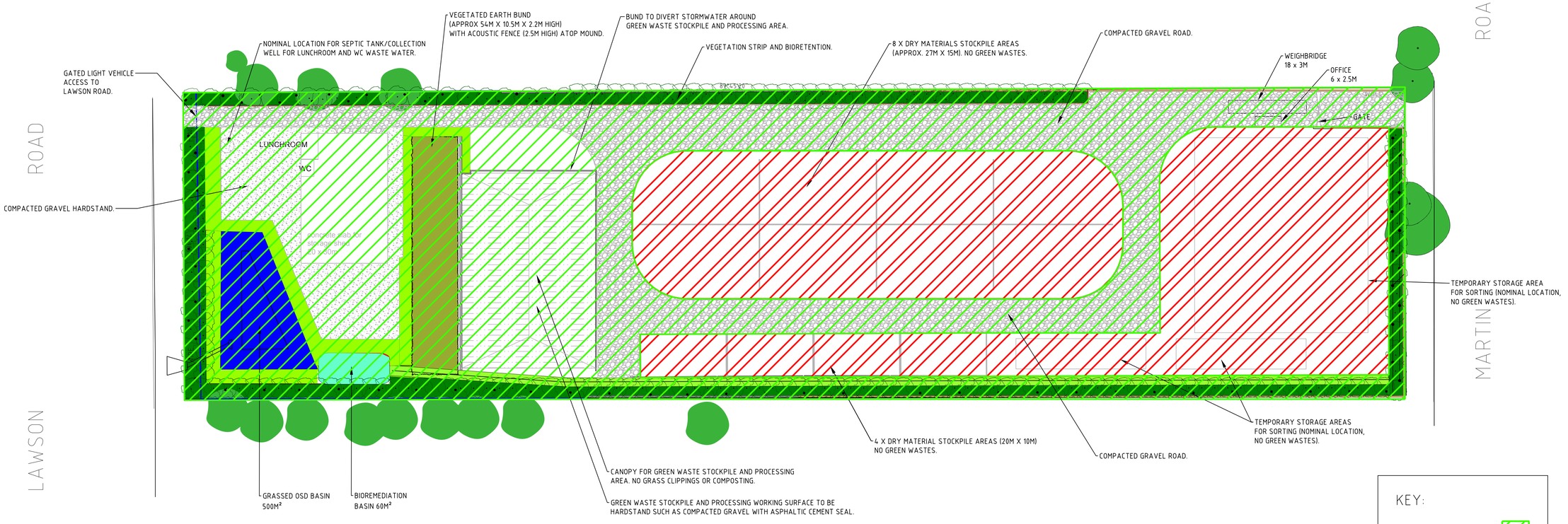
DRAWING TITLE
CONCEPTUAL SITE LAYOUT
SWEPT PATH ANALYSIS
(HRV AND AV DESIGN VEHICLES)

PROJECT NO.	PLANSET NO.	ISSUE NO.	DRAWING NO.	REVISION
P1404242	PS00	N/A	SK-A000	A

DRAWING ID: P1404242-PS00-A000-A

FILE: C:\USERS\BLING\APPDATA\LOCAL\TEMP\BRCSC4D1\BP_21-P1404242-PS00A1.DWG - PRINTED: 29.10.2015 - USER: BLING

A1 / A3 LANDSCAPE (A1LC-V1.1)



REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	FINAL	14.10.2015	BL	BL	JF	JF

SCALE
0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
NA	NA	JF

CLIENT
PRECISE PLANNING

PROJECT NAME/PLANSET TITLE
ENV. ASSESSMENT - BADGERYS CREEK
SKETCH DRAWINGS
25 MARTIN ROAD
BADGERYS CREEK NSW

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DRAWING TITLE
CONCEPTUAL SITE LAYOUT
EPA 'CLEAN' AND 'DIRTY' AREAS ANALYSIS

PROJECT NO.	PLANSET NO.	ISSUE NO.	DRAWING NO.	REVISION
P1404242	PS00	N/A	SK-A001	A

DRAWING ID: P1404242-PS00-A001-A

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A1 / A3 LANDSCAPE (A1LC-V1.1)