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15th November 2016
Our Ref: Prop. 16052

SJH Planning & Design
77 Manns Street
GOSFORD NSW 2250

**Re: Preliminary Advice – Suitability of On-Site Wastewater Disposal
Proposed Sub-Division
Lot 11 in DP576336, No. 24 Collingwood Drive Matcham
Lot 2 in DP561283, No. 2 Collingwood Drive Matcham
Lot 13 in DP576336, No. 107 Matcham Road Matcham**

1. INTRODUCTION

In regard to the proposed sub-division of Lot 11 in DP576336, Lot 2 in DP561283 and Lot 13 in DP576336 resulting in the creation of six new allotments, Larry Cook Consulting is pleased to provide preliminary advice on the suitability of the proposed new allotments to accommodate Land Application Areas (LAA) for the on-site disposal of treated wastewater.

It is understood that:

- The size of each of the new allotments is approximately 1 hectare.
- The new allotments are sloping parcels of land, partly tree covered with existing dwellings (and On-Site Sewage Management systems (OSSMs)) on three residual house blocks.
- The sub-division is located within the Central Coast Council local government area. Central Coast Council is the consent authority.
- A pre-DA meeting was convened between senior Council officers and SJH Planning & Design on 11th October 2016 to discuss various matters associated with the sub-division proposal.

2. OBJECTIVES

The *objectives* of any investigations and assessments associated with on-site wastewater disposal are:

- Carry out wastewater (effluent) disposal investigations and assessments for each new vacant allotment in accordance with the Environmental Health Protection Guidelines (DLG 1998) and AS/NZS 1547:2012 (SAI & NZS 2012).
- Ensure that the disposal of treated effluent on-site uses an approved and effective methodology in accordance with the above standards and state government guidelines.
- Assess any potential impacts from the proposed disposal of wastewater on the environment, for example proximity to any surface water bodies such as dams and waterways (streams), water bores, infrastructure and property boundaries.

The key elements of the On-Site Sewerage Management System (OSSM) investigations are considered to be the assessment of any potential impacts from the disposal of treated wastewater on the environment. A wastewater management plan (WMP) must take into consideration guideline buffer distances set by the state government (Environmental Health Protection Guidelines (DLG 1998)) and risk-based guidelines provided in AS/NZS 1547:2012.

3. PRELIMINARY ASSESSMENT OF THE SUITABILITY OF ON-SITE WASTEWATER DISPOSAL

A preliminary review of available data and information for the proposed sub-division was carried out to assess the suitability of wastewater disposal on each new allotment.

The review and office-based investigations included:

- Review of remote sensed images acquired over the area including *Google Earth* imagery and on-line Council imagery.
- Review of planning and environmental matters (and studies) including vegetation mapping, land zoning, flood mapping and environmental corridors.
- Review topographic plans and identify the physical setting (geomorphology).
- Establish the likely subsurface conditions including soil type, likely soil permeability, possible depth to bedrock and depth to groundwater.

- Establish the ground slopes and identify any surface limitations including vegetation and surface water bodies (streams and dams).
- Assess the shape and sizes of the new allotments.

The following observations are made:

- The size of the new allotments (1 ha (10,000 m²)) are, in this regard, all considered sufficiently large for on-site wastewater disposal subject to assessment of other potential site limitations.
- The soils beneath the Site are derived from the weathering of Triassic-age Terrigal Formation and belong to the Erina Soil Landscape which is developed on undulating in this area. The Terrigal Formation on the flanks of coastal valleys and hillsides in the district is variably deeply weathered and generally covered with a silty sandy colluvial and residual silty sandy loam to sandy-silty clay soil profile which can vary in thickness from 0.2 m to greater than two metres. The soils are predictably thicker in the lower parts of the valleys and sometimes on the flanks of the valleys where deep colluvium can be developed such as is likely to be the case beneath the proposed sub-division.
- Generous 'cleared' areas appear to be available for wastewater disposal on each new allotment. These areas, and physical aspects, appear to possess excellent solar and wind exposure.
- The ground slopes are considered manageable by way of a range of suitable and state-government-approved methods for wastewater application. Disposal methods considered include irrigation (surface and sub-surface), conventional beds and mound systems.
- Sufficient areas appear to be present having regard for any environmental constraints.

4. PREPARATION OF WASTEWATER MANAGEMENT PLANS

The following works would be undertaken in the preparation of a 'high level' Wastewater Management Plan (WMP) for each new vacant allotment.

- Undertake a site inspection and site walkover of all new allotments.
- Review remote sensed images acquired over the area.
- Describe the physical setting (geomorphology).
- Establish, assess and describe local and district hydrogeological conditions.
- Establish subsurface conditions including soil assessments (soil type, soil permeability), depth to bedrock and depth to groundwater.
- Collect representative soil samples from the Site.

- If required, submit representative soil samples for laboratory testing including pH, Electrical Conductivity (EC), Phosphorus Sorption (PSorp), Cation Exchange Capacity (CEC), Exchangeable Sodium Capacity (ESP) and Modified Emerson Class.
- Estimate the hydraulic load for the each new allotment.
- Acquire and utilise relevant Bureau of Meteorology (BOM) climate data and calculate a water balance.
- Assess and rank any potential impacts from the on-site disposal of treated wastewater on the environment.
- Assess the capacity of the proposed wastewater treatment system to manage the design hydraulic load from the new development.
- Assess the methods of wastewater disposal.
- Provide options for the selection of a suitable method for on-site wastewater disposal for the proposed development and the specification of the disposal area.

In addition, an assessment of the existing OSSMs for the three residual house blocks would be undertaken in order to assess the integrity and operational condition of the existing treatment systems and whether there is adequate area remaining (following sub-division) for backup disposal if, in the future, the primary LAA fails.

5. CONCLUSIONS

The findings of the preliminary office-based investigations indicate that on-site disposal of treated wastewater on each new allotment is feasible subject to detailed site investigations on each allotment, and ultimately Council approval. The investigations incorporated detailed knowledge of the geology (including soils) and geomorphology of the local area based on the results of formal wastewater disposal investigations on many properties in this valley, and district.

Treatment of all wastewater to minimum secondary standard is recommended.

6. CLOSURE

We trust this preliminary assessment meets with your approval. If you require any further information or wish to discuss the proposed work program, please do not hesitate to contact Larry Cook on 0428 884645.

For and on Behalf of
Larry Cook Consulting

A handwritten signature in cursive script that reads "Larry Cook".

Larry Cook
Environmental Scientist and Geoscientist