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5th June 2020

Ref. No. 200602

Mr. R. Piggott
Northern Beaches Council
PO Box 82
MANLY NSW 1655

RE: ON-SITE EFFLUENT MANAGFEMENT AT LOT 32 DP 8013, No. 37 STURDEE LANE, ELVINA BAY – DA2020/0277

Dear Mr. Piggott,

On behalf of the Mr. W. & Mrs. E. Walker, I am pleased to provide this submission and associated plan (Figure 1) in relation to on-site effluent management to address the points raised in your letter dated 22nd May 2020. I have been in close liaison with both Mr. Walker and Mr. Crosby and also attended the property to carry out a site assessment on 4/6/20. I also met on the property with Mr. P. Hebden of Pittwater Pumps and Tanks, who is a longstanding local wastewater system installer, to assist in obtaining as much information as possible about the existing effluent management system at the subject site.

1. Introduction

The property has an area of 911m^2 which is occupied by the following features that are shown in Figure 1:

1. A dwelling that has two small bedrooms at 8.41m^2 and 10.15m^2 in area, as well as decks off the northern and southern sides.

2. An ‘outbuilding’ that comprises a small bedroom at 8.05m^2 which adjoins the deck off the northern side of the dwelling. Whilst formally being just separated from the dwelling proper, it basically adjoins the dwelling due to its connection to the deck.
3. Another ‘outbuilding’ in the northernmost part of the property that comprises a sitting room, largest bedroom at 11.9m^2 in area that is nonetheless considered to be modestly sized and a balcony off the northern side.

Based on the points above, there are currently four bedrooms in total on the property in all structures.

The site is serviced with an on-site effluent management system. The plumbing that this system receives is associated with the dwelling only. However, the two bedrooms in the outbuildings add to the maximum potential occupancy level of the site as a whole and loadings received by the effluent management system.

With relevance to effluent management, the proposed development comprises the following components (Figure 1):

- The demolition of the small bedroom adjoining the deck off the northern side of the dwelling referred to in point 2 above. This will be re-built with a bedroom at the same location adjoining the deck, but will be considerably larger than the existing bedroom.
- The demolition of the bedroom and balcony in the northernmost structure referred to in point 3 above. This will also be re-built with a bedroom, studio and two decks at the same location, but will also be larger than the existing structure.

Based on the points above, there will still be four bedrooms in total on the property in all structures with the proposed development.

The proposed outbuildings lack plumbing and features of wastewater generation, but will also add to the maximum potential occupancy level of the site as a whole and loadings received by the effluent management system.

As conveyed by Mr. Walker and Mr. Crosby, the aim is to keep the existing effluent management system in its current form when the proposed works are completed. Prior to

explaining why it is proposed to do so, details will be provided in relation to the existing effluent management system.

2. Existing Effluent Management System

The existing effluent management system comprises the following components (Figure 1):

1. A septic tank with associated 'humus tank' as described by Mr. Hebden. This is an older style septic tank arrangement that provides primary treated effluent. Observations show that the septic and humus tanks are externally structurally intact and lack signs of failure by way of cracks, leaks and anomalous odours for example which indicates that it is operating properly and is of appropriate capacity.
2. Absorption trenching for land application that due to the direction of land fall at the septic tank site is in the northern part of the property.

There are no known details about the absorption trenching from the installer or other parties by way of age, specific location, how many there are and their exact dimensions. Therefore, information in this regard presented in this submission and Figure 1 are approximate. Nonetheless, the general area where the trenching is considered to be positioned did not display any signs of failure by way of wet/boggy ground, effluent surcharge or runoff and weed plumes for example which also indicates that the arrangement for land application is operating properly.

There is a well-developed grass lawn off the northern side of the dwelling in and adjacent to the area comprising the absorption trenching and a typical grade of 5^0 - 7^0 in a northerly direction as measured on the site with a clinometer – i.e. in no definite way towards the eastern and western boundaries. At a distance of about 4m north of the most downslope northern absorption trench, the land falls away relatively steeply to Sturdee Lane. The trench area is well-elevated and affords exposure to the open northerly aspect and prevailing winds.

Based on the site investigation and meeting with Mr. Hebden, it is considered that there are three absorption trenches in the area downslope of the septic and humus tanks off the northern side of the dwelling. These are referred to as absorption trenches 1 - 3 from south to north. Note that it is considered to be unlikely that more than three trenches would be in place. This is because the trenches have to be contained below the humus tank and above the

steeper terrain in the northern part of the property, whilst not being too closely spaced. The specific nature as to how primary treated effluent is applied to absorption trenches 1 - 3 is not known, but Mr. Hebden has advised that there are likely to be what is referred to as 'overflow pipes' above the assumed Reln drains from trench 1 to trench 2, then from trench 2 to trench 3.

Estimated details regarding the components of the land application area for primary treated effluent are provided below (Figure 1). Note that all trench dimensions and locations noted are approximate:

1. Absorption trench 1 – length of 8.2m, width of 0.9m and depth of 0.6m. 6.2m north and downslope of the dwelling, 2.1m northeast of the proposed southern outbuilding, 1.5m east of the northern outbuilding and 1.7m north of the humus tank associated with the septic tank.
2. Absorption trench 2 – spaced 3.6m north and downslope of trench 1, length of 7.9m, width of 0.9m and depth of 0.6m. 1m from eastern boundary and 1m east of proposed northern outbuilding.
3. Absorption trench 3 – spaced 3.4m north and downslope of trench 2, length of 6.7m, width of 0.9m and depth of 0.6m. 1m from eastern boundary, 7.9m from the closest point of the downslope northern boundary fronting Sturdee Lane (distance is increased along the ground surface) and 1m east of the proposed deck associated with the northern outbuilding.

Additional information is provided below to explain how the nature of the absorption trenching was estimated:

- Absorption trench 1 – there is a faint surface expression of this trench evidenced by a minor dip in the land surface. This has been used to estimate the width of all trenches at 0.9m.
- Absorption trench 2 – has an even fainter surface expression relative to trench 1. But with the considerable estimated distance between trenches 1 and 3, it is assumed that another trench would have been placed in between them.
- Absorption trench 3 – a hand-auger bored as part of the soils assessment was located above this trench. This is considered to be because the geotextile fabric above the Reln drain and gravel bed was actually felt and observed. Note that all hand-auger

holes were carefully bored in the event that they were on top of the trenches, but were not intentionally used to locate them due to the potential to result in damage. Trench 3 was not damaged by the particular auger hole terminated at a shallow depth in that the geotextile fabric was not punctured and the hole did not extend beyond it into the gravel bed.

3. Subsurface Profiles

As part of the site investigation, 100mm diameter hand-auger holes were bored in the area containing absorption trenches 1 - 3. The typical subsurface profiles are outlined below.

Absorption Trench 1

(i) FINE SANDY LOAM (TOPSOIL) – A1 Horizon

- observed from the surface to a depth of 0.25m.
- comprises dark grey-brown, fine grained sandy loam with very few ironstone and weathered sandstone fragments (i.e. <2% coarse fragments from Table E2 in AS/NZS 1547, 2012).
- soil category 3 for loams from Table E1 in AS/NZS 1547 (2012).

(ii) FINE SANDY CLAY – A2 Horizon

- observed from a depth of 0.25 - 0.45m.
- comprises firm, brown to orange-brown, fine grained sandy clay with very ironstone and weathered sandstone fragments (i.e. <2% coarse fragments).
- soil category 4 for clay loams.

(iii) SANDY CLAY LOAM – B Horizon

- observed from a depth of 0.45 - 0.8m.
- comprises firm, brown to orange-brown and light-grey, fine grained sandy clay loam with very few ironstone and weathered fragments (i.e. <2% coarse fragments).
- soil category 4 for clay loams.

(iv) WEATHEERD SANDSTONE – C Horizon

- observed from 0.8m to a depth of 1.0m.

- comprises extremely low strength (i.e. sandy loam texture), brown to orange-brown and light-grey, fine grained sandstone.

Extremely low strength sandstone is easily remoulded by the hand into a material that exhibits soil properties. It is considered that the weathered sandstone observed is basically a soil that has retained the majority of the structure (or look) of the higher strength material at depth.

Absorption Trenches 2 and 3

(i) FINE SANDY LOAM (TOPSOIL) – A Horizon

- observed from the surface to a depth of 0.4m.
- comprises dark grey-brown, fine grained sandy loam with very few ironstone and weathered sandstone fragments (i.e. <2% coarse fragments).
- soil category 3 for loams.

(ii) LIGHT CLAY – B Horizon

- observed from 0.4m to a depth of 1.2m.
- comprises firm, brown to orange-brown light clay with very few ironstone and weathered fragments (i.e. <2% coarse fragments).
- soil category 5 for light clays.

4. Reasons Supporting the Continued Use of the Existing Effluent Management System

1. It is operating properly without displaying signs of failure with regards to the treatment and land application components. This is also testified by Mr. Walker who has experienced no problems or issues with its operation.
2. There is a current approval to operate granted by Council dated 23/1/19 – LIC 199864.
3. The proposed works do not result in an increase in the maximum potential occupancy level of the site as a whole in the dwelling and two outbuildings – i.e. total four bedrooms existing and four bedrooms will remain when the outbuildings are demolished and re-built. However, the Council letter dated 22nd May 2020 notes that the Development Application indicates two additional bedrooms and a studio that should be considered as a potential bedroom (but in the paragraph below notes

potentially increased loading on the system). This would add to the maximum design effluent volume. However, it is not known why Council consider there are two extra bedrooms with the proposed development and whether this results in three extra bedrooms if the studio was added as a potential bedroom.

4. With the proposed development, there is no change to the usage of the dwelling and outbuildings for holidays/week-ender use by Mr. & Mrs. Walker and occasionally by some members of their family – i.e. part-time/intermittent usage and not rented to members of the public.
5. The grass cover and exposure to the open northerly aspect and prevailing winds across the area comprising trenches 1 - 3, which enhances the benefits of evapotranspiration and concurrently reduces the absorption loads of treated effluent on the soils.

Further to the details above, the existing effluent management system has a proven track record based on the current usage patterns where the site is unoccupied for the majority of the time over a given year – i.e. substantial resting periods. However, it is understood that the site may be occupied by Mr. & Mrs. Walker on a full-time basis at some time in the future who currently reside in Queensland. This is why the studio is proposed in the northern outbuilding so Mrs. Walker could continue her current artistic pursuits. It is acknowledged that the current part-time usage of the property contributes to the performance of the existing effluent management system and lack of signs of failure. However, the same would likely to result if the property was occupied by Mr. & Mrs Walker on a full-time basis due to what would be the low output of effluent.

With regards to the studio, it has a legitimate usage as the room it is noted as based on the details in the paragraph above. It is considered that the studio should not be added as a potential bedroom, particularly because it is a much larger open room relative to the actual bedroom proposed in the northern outbuilding. The occurrence of a bedroom proper in this outbuilding also testifies to the usage of the proposed studios as a ‘non potential bedroom’. Therefore, it is considered that the studio in the proposed northern outbuilding will not result in an increase in the maximum potential occupancy level and loadings on the effluent management system.

For potential bedrooms in a general sense, not all Local Government Areas apply such an approach. In offshore areas of Pittwater and other unsewered parts of the Northern Beaches Council at waterfront localities such as Cottage Point (which can be accessed by road), it is considered that the addition of potential bedrooms is an overly conservative approach that adds a dimension of complexity/difficulty that should be avoided, particularly in light of the often physically constrained nature of the land and small property sizes encountered. From my experience, the notion of potential bedrooms in such areas is a fairly recent thing since the formation of Northern Beaches Council where a consistent approach is not always adopted. It is urged that Council carefully consider the scenario with the addition of potential bedrooms on small residential sized properties in offshore and waterfront localities on a general policy sense.

In conclusion, it is considered that the existing effluent management system is appropriate in its current form for continued use when the existing outbuildings are re-built. Nonetheless, if there were ever signs of failure with the septic/humus tanks and/or absorption trenching, then the treatment and/or land application components of the effluent management system could be replaced. But with the proper functioning of the current effluent management system and no change in usage patterns or the actual and maximum design effluent volumes, there is considered to be no imperative to upgrade this arrangement.

Yours sincerely,

GRANT AUSTIN
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