

1 May 2024

Regis Aged Care Pty Ltd
53-59 Gloucester Road
Hurstville NSW 2220

Attention: Michael Robinson

Dear Michael,

Regis Belrose Residential Aged Care Facility – 181 Forest Way, Belrose

Civil Stormwater Section 4.56 Amendment Letter

This letter has been prepared to summarise and respond to the impacts on the site stormwater management strategy to support the Section 4.56 Development Application submission for the Regis Belrose Residential Aged Care Facility development located at 181 Forest Way, Belrose.

The aged care facility has previously been DA approved (MOD2022/0889) by Northern Beaches Council and included the following design documentation completed by the Civil Engineers ACOR Consultants;

- Stormwater Management Plans – SY160709 C1.01-C4.01 Revision D dated 10.09.18
- Stormwater Management Report – Rev B dated 10.09.18
- DA Letter of Intent for S4.56 Amendment– dated 14.04.2022

The Regis Aged Care development is to be re-submitted for S4.56 Development Application and is proposed to reduce the gross floor area by 50m², number of bedrooms by 6 and reduce carparking by 4 as indicated on the amended site architectural drawings completed by Morrison Design Partnerships

These modifications along with the previous stormwater design changes as noted in the ACOR Consultants S4.56 letter of intent have been incorporated into the current Civil stormwater management plans as part of this S4.56 modification. The changes include;

- Relocation of the OSD from the building's internal courtyard to outside the building footprint
- Amendments and substitution of the WSUD stormwater quality treatment devices

These amendments are represented in Figures 1 and 2 below which show the approved stormwater strategy and proposed modification. The proposed design does not alter the intent of the approved site stormwater management strategy and still meets the Council requirements as stated in the approved development consent conditions and Council DCP for both onsite detention and water quality measures. This is discussed in more detail below.

The revised stormwater management plans representing the updates as part of the S4.56 modification are listed in Attachment 1.

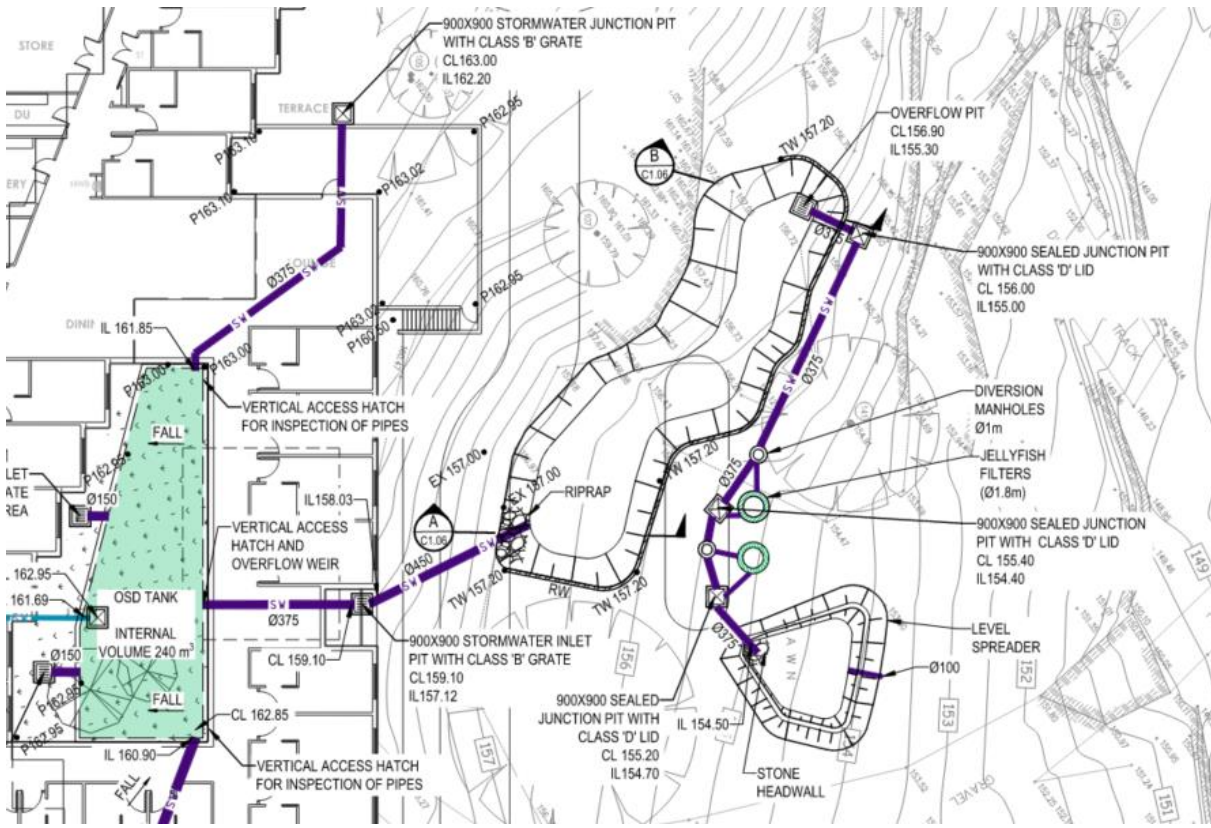


FIGURE 1 – APPROVED OSD AND WSUD STORMWATER MANAGEMENT LAYOUT

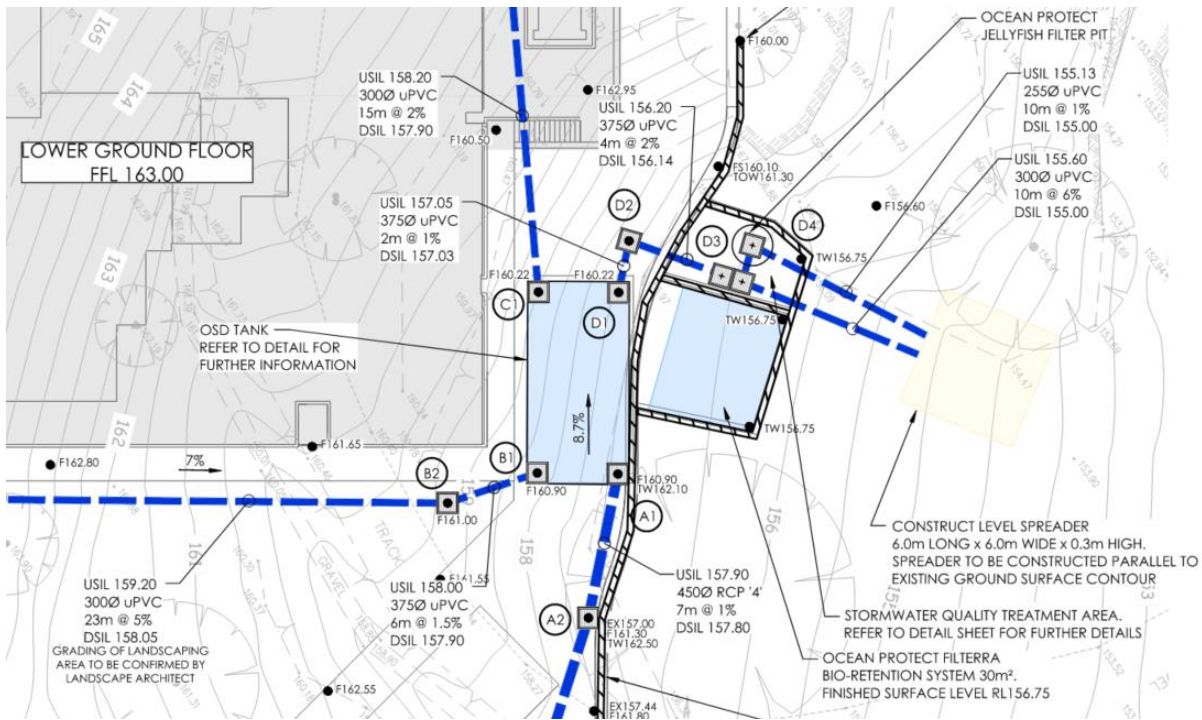


FIGURE 2 – PROPOSED MODIFICATION TO OSD AND WSUD STORMWATER MANAGEMENT LAYOUT

OSD Modification

The proposed OSD design maintains the Council DCP requirement to ensure that the post-development flows do not exceed the pre-development flows generated from the site in all storms from the 20% Annual Exceedance Probability (AEP) to the 1% AEP. A summary of the pre-development flows and post-development flows are in the below table indicating compliance with the requirement.

TABLE 1 – OSD PERFORMANCE SUMMARY

	Pre-Development (l/s)	Pre-Development (l/s)
20% AEP	138	128
10% AEP	188	148
5% AEP	235	170
1% AEP	350	341

The OSD tank is proposed to be relocated from within the building's internal courtyard to outside the building footprint. It is to be located beneath the rear access road for fire truck egress to the eastern portion of the site for bushfire fighting purposes.

The access road is required to be filled 3m and as such a large retaining structure is located along the perimeter of the road. The OSD tank is proposed to be incorporated into the wall structure and utilises the void space beneath the roadway, allowing for a depth of 2.55m above the existing surface and subsequent outlet pipe.

This location is an improvement on the previously approved design as it allows an emergency surcharge point at the tank lid point which is external to the building and below the finished floor level. The OSD design can also utilise the existing steep topography to its advantage, allowing for a deeper tank with a free draining outlet without tailwater restrictions which improves the hydraulic performance of the drainage system.

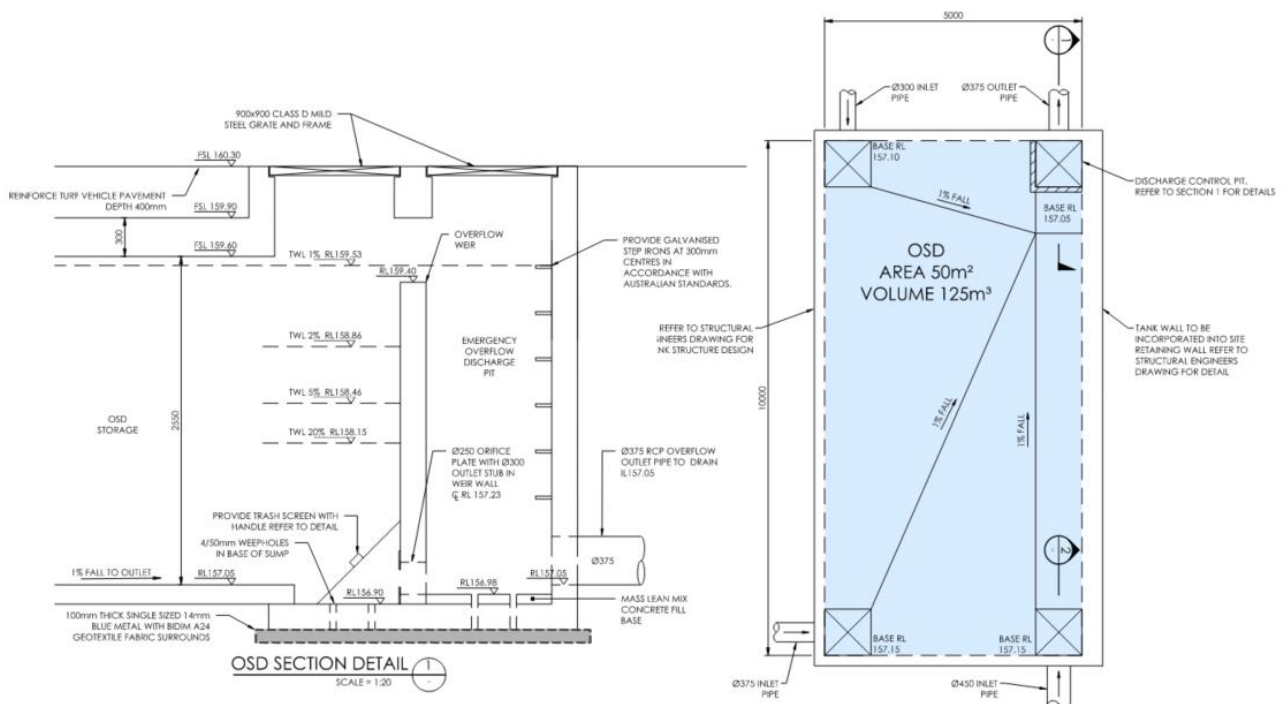


FIGURE 3 – OSD DETAIL

WSUD Modification

The proposed WSUD design maintains the Council DCP and project requirements for stormwater quality treatment targets.

The proposed development is located approximately 200m upstream of Snake Creek which is the receiving natural water body to the east of the site. The site stormwater ultimately discharges to Snake Creek via overland flow.

Snake Creek is within an Endangered Ecological Community and is protected by both the Threatened Species Act 1995 and the Environmental Protection and Biodiversity Act 1999. The development must therefore ensure that the water quality of Snake Creek is maintained at its current levels and not polluted as a result of the redevelopment.

Water quality parameters for Snake Creek are found in the Warringah Creek Management Study and were previously nominated by the ACOR Consultants report. Concentration levels can be found in table 2 below.

TABLE 2 – POLLUTANT CONCENTRATIONS OF SNAKE CREEK

Pollutant	Concentration (mg/L)
Total Suspended Solid	1
Total Nitrogen	0.3
Nitrate and Nitrite	0.1
Total Phosphorus	<0.01
Ortho-Phosphorus (FRP)	<0.01
Biological Oxygen Demand	<2
Faecal Coliforms	--

These targets are well over and above Councils standard pollutant targets and are well below the concentrations of ANZECC requirements. As such the WSUD treatment train for the site is atypical and is in addition to what is generally provided for developments of this type and scale.

The approved development application design achieved these targets by utilising the following WSUD treatment train.

- Primary Treatment
 - 24x Filter basket pit inserts Stormwater360 Enviropod (now known as OceanProtect Ocean Guard)
- Secondary Treatment
 - OSD tank with trash screen to remove fine sediments and gross pollutants
 - 150m² conventional bio-retention basin
- Tertiary Treatment
 - 2x Jellyfish filtration system in series supplied by Stormwater360 now Oceanprotect

This WSUD treatment train has been revised as part of the proposed modification to the stormwater management strategy as indicated below;

- Primary Treatment
 - 18x Filter basket pit inserts Ocean Guard supplied by OceanProtect
- Secondary Treatment
 - OSD tank with trash screen to remove fine sediments and gross pollutants
 - 30m² Filterra bio-retention basin supplied by OceanProtect
- Tertiary Treatment
 - 1x Jellyfish filtration system supplied by OceanProtect

Both the approved and proposed designs utilise proprietary treatment products supplied by OceanProtect to achieve the required pollutant reduction targets. The design has been modified in consultation with OceanProtect and removes the bio-retention basin and 1x of the Jellyfish filters and replaces them with the OceanProtect Filterra bioretention system.

This system provides a better outcome as it removes the use of the dual in-series Jellyfish system which OceanProtect has advised is not a preferred arrangement for pollutant removal or hydraulic performance. The proposed treatment train, utilising the Filterra bio-basin, provides a more natural WSUD outcome that will fit into the surrounding landscape and reduce the future maintenance requirements on the facility.

The proposed alternative strategy still achieves the required post-development stormwater pollutant concentration reduction targets to discharge to Snake Creek. This has been modelled in MUSIC with the post-development mean discharge concentrations representing the site stormwater discharge indicating that it is less than that of the existing Snake Creek concentration, refer Table 3 below.

TABLE 3 – MUSIC OUTPUT – POST-DEVELOPMENT POLLUTANT CONCENTRATION

Pollutant	Existing Snake Creek Concentration (mg/L)	Post-Development Mean Discharge Concentration (mg/L)
Total Suspended Solid	1	0.67
Total Nitrogen	0.3	0.241
Total Phosphorus	<0.01	0.00767

The proposed modifications to the Regis Aged Care development therefore remain in accordance with Council DCP requirements for both Onsite Detention and WSUD targets as well as maintaining the design intent of the previously approved DA stormwater management plans completed by ACOR Consultants.

Should you have any queries or wish to discuss, please do not hesitate to contact the undersigned.

Yours Faithfully

ENTEC Consultants Pty Ltd



Nathan Pearce | Director – Civil

Attachment A - Stormwater Management Plans for S4.56 Modification

Drawing List – 230074-01

- C100 – Cover Sheet, Legend & Drawing Schedule
- C101 – Notes Page – Sheet 1
- C102 – Notes Pages – Sheet 2
- C201 – Existing Site Plan
- C301 – Soil Erosion Control Plan
- C310 – Soil Erosion Control Details
- C501 – Stormwater Management Plan
- C510 - Stormwater Details – Sheet 1
- C511 – Stormwater Details – Sheet 2
- C512 – Stormwater Details – Sheet 3
- C520 – Stormwater Catchment Plan