Blacktown City Council
Growing with Pride

Your ref: SSD 7228
File no: MC-15-1942

1 February 2016

Industry Assessments
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Rebecca Sommer

Dear Ms Sommer,

Re: SSD 7228 Sydney Zoo, Bungarribee Park, Western Sydney Parklands

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I refer to your correspondence dated 8 December 2016 inviting us to provide comments on the State Significant Development lodged under Part 4 of the *Environmental Planning and Assessment Act 1979* ("the Act") for the above proposal.

The proposal has been reviewed by Council's officers and several issues have been raised and listed in **Attachment A** to this letter, which are requested to be addressed to Council's satisfaction by the proponent before any determination of the proposal is made by the Department.

Should the Department support the approval of this application, please refer to **Attachment B** for recommended conditions of consent.

If you would like to discuss this matter further, please contact me on 9839 6228.

Yours faithfully,

Judith Portelli
Manager Development Assessment

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ATTACHMENT A

Additional information is requested with regard to the following matters:

Planning matters

1. It is noted that the minimum required number of accessible spaces are provided in relation to the 475 permanent car parking spaces. However, the 840 overflow spaces do not allow for the provision of accessible spaces and an appropriate path of travel. It is considered appropriate to make provision for further accessible spaces or a 'drop off zone' to accommodate the visitors which utilise the overflow spaces at peak visitation periods.

   We suggest that an area close to the entry point within the overflow area along the northern fence of the carpark be nominated for this purpose, when required.

   The drop off zone should cater for any visitor drop offs, not just taxi and buses. The drop off zone is to be sign posted to this effect.

2. Provide further details of any 'boundary fencing' for the zoo and car park areas and related security measures, in particular when viewed from the public domain.

3. Clarification is sought with regard to the open area between the permanent and overflow car parking areas. Should this be either an open treed area or a water body, this should be cordoned off to ensure that cars do not park in this area.

Heritage matters

4. European Heritage

The European Heritage study does not analyse the many known extant layouts and aerial imagery for the site to establish through primary sources the former uses on the land. Further research is required in order to both assess the heritage impact and also inform potential interpretation of the site.

The association of the area with the Bungarribee Estate, would indicate that there has been substantial activity in this area since the settlement of the area in the Colonial era.

The area is currently open grassland and was likely to have formerly included farming use, as well as the OTC site use during the Second World War

The location along the Great Western Highway is likely to have encouraged potential small commercial activities along the Great Western highway. To the west of Eastern Creek there was a post office and a school.

Early aerial photo images indicate a small structure located on the site of the proposed Zoo fronting the Great Western highway. This should be investigated as well as the potential for this site to contain an associated Bee hive well. A number of previous historical studies have been carried out on the area including the GML study for the Bungarribee Doonside parcel.

It should be noted that the site was previously within the State Heritage Curtilage for Bungarribee Estate, and this alone warrants greater investigation of past uses.

The Heritage Impact Statement is also to review the use of the site potentially in association with the training of the Australian Light Horse, and other early military usages in the area.

The potential to utilise the current entry gates of the former OTC site as the Zoo Gates should also be investigated.

It is highly recommended that the local historical societies are consulted as part of the Heritage Impact Statement.

5. Aboriginal Heritage

Works at Doonside residential precinct indicated a very high level of Aboriginal Artefact material retrieved in the area. While this is reflected by a number of AHIMS listed sites in the precinct, the identified sites are unlikely to cover the full magnitude of Aboriginal Heritage in the precinct.

The Aboriginal Cultural Heritage Study provided notes that a further Aboriginal Cultural Heritage Assessment Report (ACHAR) in consultation with local indigenous groups is required in order to establish the archaeological potential of key areas of the site. This should be carried out prior to the issue of development consent as it may affect the layout of the zoo reserves and open space. The proximity of the site to eastern creek and the high point of Rooty Hill, as well as the previous substantial finds at Bungarribee Doonside Parcel and the limited previous development of the area is likely to mean that he aboriginal archaeological potential in this area could be high.

6. Heritage Recommendations:

a) The ACHAR is to be completed and assessed prior to issue of any Development consent. Opportunities to preserve significant aboriginal artefacts and usage sites intact within the development are to be investigated where identified in the ACHAR report.

b) The non indigenous heritage study is to be upgraded to review in more depth from aping and aerial images the former use of the site of the zoo. This is to be completed prior to issue of any Development consent.

c) An interpretation Strategy for the complex is to be developed arising from the studies and submitted prior to issue of any Development consent.

d) An AHIP is to be provided prior to the commencement of works identifying a location within the precinct or nearby in Western Sydney Parklands for a keeping place for artefacts retrieved during the works.

e) Areas should be set aside in the planning of the site for the protection of / interpretation of the aboriginal heritage of the site, probably in situ.

It is assumed that the Department of Planning and Environment will implement their standard conditions of consent in relation to this development on any consent issued. However, it is requested that these specific recommended Conditions of Consent are also imposed:

Planning Conditions

1. Ensure that the composting activities are appropriately managed and contained at all times, in particular during windy and adverse weather conditions.
2. Development consent is required to be obtained prior to the implementation of any paid parking scheme.
3. The 'Animal Escape Policy' and relevant security, parking, traffic and operational management plans are to be in place prior to commencement of the operation and a copy of each of these be made available to Council, the local Police and other relevant agencies. These policies / plans are to include steps to notify and communicate with the public, Council and relevant agencies in a timely manner.
4. A Maintenance Strategy is to be prepared and implemented during the operation of the Zoo. This strategy is required to address the built form including the buildings, park facilities, enclosures, pathways and boardwalks.
5. Separate approval is required for any evening events or night activities.
6. Details of any fencing around the Zoo and car park areas are to be provided prior to the issue of any Construction Certificate.
7. Fencing around the Zoo and car parking area is required to be erected prior to the issue of any Occupation Certificate.
8. The open area between the permanent and overflow car parking areas should be cordoned off to ensure that cars do not park in this area.
9. An area close to the entry point within the overflow area along the northern fence of the carpark is to be made available for accessible parking, when required.
10. The drop off zone is required to cater for any visitor drop offs, not just taxi and buses. The drop off zone is to be sign posted to this effect.

Heritage Conditions

11. It is highly recommended that the local historical societies are consulted as part of the Heritage Impact Statement.
12. The ACHAR is to be completed and assessed prior to issue of any Development consent. Opportunities to preserve significant aboriginal artefacts and usage sites intact within the development are to be investigated where identified in the ACHAR report.
13. The non indigenous heritage study is to be upgraded to review in more depth from aping and aerial images the former use of the site of the zoo. This is to be

completed prior to issue of any Development consent.

14. An interpretation Strategy for the complex is to be developed arising from the studies and submitted prior to issue of any Development consent.

15. An AHIP is to be provided prior to the commencement of works identifying a location within the precinct or nearby in Western Sydney Parklands for a keeping place for artefacts retrieved during the works.

16. Areas should be set aside in the planning of the site for the protection of / interpretation of the aboriginal heritage of the site, probably in situ.

Environmental Health Conditions

Advisory

17. Compliance with Public Health Act

Where any air handling, evaporative cooling hot water, humidifying, warm water or water cooling systems are installed; all relevant information notated within Clause 11 of the Public Health Regulation 2012 (NSW) must be submitted to Council within one month of practical completion including:

- the type of system
- the address of the premises on which the system is installed
- the name, residential and business addresses of the owner of the premises
- the telephone numbers to which, during business hours and outside business hours, the person(s) referred to above may be contacted.

Prior to Occupation

18. Compliance with Food Act

Council must verify that the premises comply with:

- *Food Act 2003* and Regulations there under
- Australian New Zealand Food Standards Code
- Australian Standard 4674-2004 *Design, construction and fit-out of food premises.*

Occupation of the premises for the food business must not occur until a registration application has been submitted to and approved by the Blacktown City Council.

During Occupation

19. The food premises shall be maintained in accordance with the requirements of:

- *Food Act 2003* and Regulations there under.
- Australian New Zealand Food Standards Code.
- Australian Standard 4674-2004 *Design, construction and fit-out of food premises.*

20. The proprietor is to ensure that all food handling complies with the requirements of the Food Act 2003 and Regulations there under.

21. All plant and equipment must be operated in a proper and efficient manner to ensure that the project specific noise limits are maintained throughout the life of the plant.

22. Dangerous goods and hazardous substances must be stored in accordance with the Workcover Authority requirements. All tanks, drums and containers of toxic and hazardous materials must be stored in a bunded area.

23. All liquids, including oils and chemicals must be stored in a covered and bunded area. The bund is to be made of any impervious material and be large enough to hold the contents of the largest container plus 10% i.e. 110% the total stored volume. Where applicable the construction of bunds must comply with the requirements of:

- Australian Standard AS 1940 2004: The storage and Handling of Flammable and Combustible Liquids;
- Australian Standard AS 4452 1997: The storage and Handling of Toxic Substances
- Storage and handling of Dangerous Goods Code of Practice 2005 Workcover NSW
- NSW DECC (2007) - *Storing and Handling Liquids: Environmental Protection - Participants Manual*
- NSW DECC (2005) - *Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management - Part B Review of Best Practice and Regulation.*

24. Sufficient supplies of appropriate absorbent materials and/or other appropriate spill clean-up equipment shall be kept on-site to recover any liquid spillage. Liquid spills must be cleaned-up using dry methods only and shall not give rise to an offence under the *Protection of the Environment Operations Act 1997*.

25. The use and operation of the premises must not cause the emission of any odours that, by reason of its level, nature, character or quality is likely to be harmful to or interfere unreasonably with the comfort or repose of person who is outside the premises.

26. The garbage and recycling storage area must have a smooth impervious floor that is graded to a floor waste. A tap and hose must be provided to facilitate regular cleaning of the bins and all waste water must be discharged to the sewer in accordance with the requirements of Sydney Water. Garbage bins must be designed to prevent the escape of any liquid leachate and must be fitted with a lid to prevent the entry of vermin.

27. No contaminated waste water or liquid waste shall be discharged into the stormwater system. The stormwater quality improvement device(s) must be maintained to avoid discharge of non-aqueous films, scums and odours in all modes of operation. The device(s) must be maintained to the manufactures requirements

and serviced annually.

Natural Areas Conditions

28. The following items are to be included in the Biodiversity Management Plans (construction and operational):

- Species selected for revegetation of native vegetation areas need to be locally endemic.
- The nest boxes should be installed and consist of a mixture of boxes suitable for different species. This will ensure the known occurrences of micro bats in the area are catered for.
- Plans need to include the extent of works to be carried out and work must be carried out by qualified bush regeneration professionals.
- Additional 'ongoing' bush regeneration should be carried out along the riparian corridor.

Drainage Conditions

General Conditions

29. Each year on 1 September the registered proprietor/lessee is to provide to Council's Asset Design Services Section a report outlining all maintenance undertaken on the Stormwater Quality Improvement Devices in accordance with the approved maintenance schedule and details of all non-potable water used. All material removed are to be disposed of in an approved manner. Copies are to be provided of all contractor's cleaning reports or certificates to Council's WSUD Compliance Officer.

30. The development must at all times maintain the water quality system to achieve the following minimum pollutant removal targets for the entire site in perpetuity including the approved bioretention plant species:

Required percentage reductions in post development average annual load of pollutants

Pollutant	**% post development pollutant reduction targets**
Gross Pollutants	90
Total Suspended Solids	85
Total Phosphorous	65
Total Nitrogen	45
Total Hydrocarbons	90

Prior to the Release of Construction Certificate

31. Design an on-site detention basin to mitigate all post developed flows from the site to not exceed pre developed rural catchment flows (with an initial pervious loss of 15 mm) for all storm events from 1 in 2 year ARI to 1 in 100 year ARI. This design is to

be supported by electronic modelling that complies with the requirements of the Council's Engineering Guide for Development 2005 and account for any bypass of the detention basin. The DRAINS model *2015 12 03 - EIS Exhibition - Drains.drn* provided in support of the application does not use the required 15 mm initial loss for the existing rural site, but used 5 mm initial loss which is only applicable to the developed site. This significantly overestimates the allowable discharge rates. None of the targets have been achieved. A two stage outlet control plus weir is required to manage the various flow rates. Provide pre and post as two separate models.

32. Amended Concept Drainage Plans from Lindsay Dynan must address the following:

i. The bioretention areas are scattered throughout the development. To ensure effective operation aech basin is to be designed to ensure an absolute minimum filter area of 1.7% of the catchment area draining to it. Each basin is to be designed for maintenance and ensure vehicular access for future system replacement.

ii. Provide an intermediate riser detail for long subsoil lines, or subsoil collection pipes at maximum 20 m intervals.

iii. Provide a detail of a subsoil riser for flushing and maintenance of the subsoil collection pipe. The riser is to include two 45^0 bends with a short section of un-slotted straight (minimum 300 mm) in between. The vertical riser is to stop 50 mm above the extended detention depth and sealed with a removable screw cap.

iv. Where the downstream 100 year ARI water level in the various detention systems is above the gravel layer of any nearby bioretention system the subsoil pipe from the bioretention is to discharge downstream of any detention discharge control pit.

v. All outlets to the bioretention basin must be daylighted with pipe inverts at or above the filter level and no surcharge pits are permitted.

vi. Provide scour protection for the piped discharges into the bioretention area. Provide calculations or supporting nomographs.

vii. Provide a Raingarden Sediment Pit as part of the scour protection for the piped outlets to all the bioretention basins. This pit is to include a minimum 400 mm deep silt trap to protect the filter material from clogging. The concrete top of pit is to be set to the filter media level with a surcharge style grate over or surrounded by railings. The subsoil seepage drainage is to be directed through the side to the bioretention filter media, or transition layer, but not to the gravel layer.

viii. Provide a detail of the overflow pit from the bioretention basin. The grate is to be a raised park or surcharge style to minimise blockage. The pit size is to be increased such that depth of weir flow into the pit for the 1 in 100 year ARI event is a maximum of 100 mm, assuming 50% blockage.

ix. The Stormceptor models nominated are too small for the catchment areas draining to them and should be designed to treat a minimum 6 month flow. Typically this would lead to a model such as a S.400/700.C1 (102 l/s) for the smaller catchment and a S.600/2700.C1 (375 l/s) for the larger catchment.

x. The minimum SPEL cartridges are ten for the larger catchment and eight for the smaller catchment.

xi. Clearly nominate on the plan which pits contain the Stormsacks.

xii. The SPEL Bayfilter tank is to be increased in size to a minimum 1.77 m^3/cartridge upstream of the 850 mm weir.

xiii. Provide a baffle 200 mm upstream of the weir within the SPEL Bayfilter tank and extending from the underside of the tank to 450 mm below the weir level.

xiv. Provide a water quality catchment plan showing what areas drain to specific devices and what areas are bypassing treatment.

xv. Access grates to the below ground detention tank must be a minimum 900 mm by 900 mm and are positioned such that the maximum distance from any point in the tank to the nearest grate is not greater than 3 m in accordance with the requirements of Council's Engineering Guide for Development 2005.

xvi. Confined space entry warning signs are to be detailed on the drainage plans adjacent to all entries into the detention and Bayfilter storage tanks in accordance with Council's Engineering Guide for Development.

xvii. Provide Floodway Warning Signs for the bioretention systems and above ground detention areas in accordance with Plan A(BS)114S from Council's Engineering Guide for Development 2005.

xviii. The basin 2 spillway (currently 25 m long to Eastern Creek) is to be designed to cater for the PMF event and ensuring the stability of the basin wall. The weir is to comprise a concrete 6.5 m perimeter road graded at each end for appropriate vehicle movement to avoid scraping and contain a vertical concrete seepage cut off wall (minimum 600 mm deep) through the centre. Rock scour protection is to be provided on the downstream side with a stilling basin. Provide details.

xix. The four separate outlets from Basin 2 discharging to Eastern Creek are to be deleted and provide a single discharge point into the stilling basin. The stilling basin is to be a minimum of 30 m long with level overflow to provide uniform sheet flow downstream.

xx. Ensure internal pipe drainage system carries the minimum 20 year ARI storm.

xxi. Amend section 1 from drawing DA1(B) to show the correct top of water levels.

xxii. Provide clear sections and details to verify that the minimum harvesting storage volumes can be achieved and a minimum 80% non-potable reuse efficiency achieved. The Main Storage Basins are shown as 2400 m^3 of permanent storage in MUSIC (this is the storage available for reuse and excludes

settlement zones, etc) however Table 3 of the *Stormwater Management Plan: Sydney Zoo,* 3 December 2015 indicates a live volume of 1750 m^3.

xxiii. All development including carparks are to be above the 1 in 100 year ARI flood level. Any building floor levels are to be above the 1 in 100 year ARI flood level plus 0.5 m.

33. Where amended MUSIC modelling is required, the model from Lindsay Dynan must address the following:

i. The swale treatment node is to be modelled under the "More" tab with k (m/yr) values of 800 for TSS, 600 for TP and 50 for TN in lieu of the default MUSIC values.

ii. Where the inflows are regularly distributed along the length of the swale, the swale length nominated in the swale treatment node in MUSIC is to be one third of the actual length. No upstream catchment is permitted to be treated within the swale.

iii. The filter media depth for the bioretention node is 400 mm based on plan DA 12 (B).

iv. The SPEL Stormceptor node used does not meet Council standard and significantly overestimates the pollutant removal rates. Contact Council for the correct nodes.

v. The Stormceptor models nominated are too small for the catchment areas draining to them and should be designed to treat a minimum 6 month flow. Typically this would lead to a model such as a S.400/700.C1 (102 l/s) for the smaller catchment and a S.600/2700.C1 (375 l/s) for the larger catchment. Amend maximum bypass rates to match.

vi. The Stormceptor node is to have a Low Flow Bypass equivalent to 50% of the downstream Bayfilter design flow.

vii. The SPEL Bayfilter detention node has been modelled incorrectly for Blacktown. In the SBF Vault Bay Detention Node:
a) Under the "More" tab the k (m/yr) for TSS, TP and TN are all to be set to 0.
b) The Low Flow Pipe Diameter is incorrect. Calculate as an orifice 0.85 m deep with the maximum bypass flow for the filters.
c) The minimum tank surface area in MUSIC is 1.56 m^2/cartridge behind the weir (after deducting the cartridge area).

viii. The Main Storage Basins are shown as 2400 m^3 of permanent storage (this is the storage available for reuse and excludes settlement zones, etc) however Table 3 of the *Stormwater Management Plan: Sydney Zoo,* 3 December 2015 indicates a live volume of 1750 m^3. Which is right?

ix. Account for any bypass for the site.

34. Revised Landscape plans are required that include appropriate species for the bioretention system in accordance with the BCC Handbook Part 5 - Vegetation

Selection Guide (October 2012 or as revised) for the 400 mm deep filter media. Planting within the filter area should incorporate several growth forms, including shrubs and tufted plants and be densely planted (tufted plants at a minimum of 10 plants per square metre) to ensure plant roots occupy all parts of the media. Groundcover species must not be used. To ensure diversity and disease resistance a minimum of 6 different species is required planted as a matrix. All plants within the filter area are to be planted from tubestock or virotube and not pots.

35. Amended architectural plans are required for buildings, or parts of buildings, that are not affected by BASIX, to demonstrate compliance with the minimum standards defined by the Water Efficiency Labelling and Standards (WELS) Scheme for any water use fittings. Minimum WELS ratings are:

i. 4 star dual-flush toilets;

ii. 3 star showerheads;

iii. 4 star taps (for all taps other than bath outlets and garden taps);

iv. 3 star urinals; and

v. Water efficient washing machines and dishwashers are to be specified.

36. An experienced hydraulic engineer is to prepare and certify a detailed Non-Potable Water Reuse Plan for non-potable water uses (including all uses as per Table 2 of the *Stormwater Management Plan: Sydney Zoo,* 3 December 2015 plus a minimum watering rate of 1 kL / year / m^2 for the bioretention filter areas) on the site. Allow to deliver summer landscape watering rates at a minimum 50% above the average. The hydraulic engineer is to also certify that in accordance with table 6.4 of *Managing Urban Stormwater: Harvesting and Reuse* by the Department of Environment and Conservation, April 2006 the water treatment is appropriate to achieve fit for purpose for the various water uses. The plan is to show the reuse pipe arrangement including first flush or pre-treatment system, pump, isolation valves, flow meters for all mains water inflows and solenoid controlled mains water bypass (required for the toilets) and non-potable usage outflows, a timer for landscape watering, an inline automatic backwash filter, UV Treatment. Ensure that all Sydney Water requirements have been satisfied. All reuse pipes should be coloured purple. Warning signs are to be fitted to all external taps where non-potable water is used as a source.

37. Details are to be provided for permanent interpretive signage minimum A0 size to be installed to highlight the water quality improvement process. The sign is to incorporate a simplified drainage layout of the site and detail through words and pictures all the different water quality devices including the rainwater tank and explain the benefit to the site and community. The sign is to be supported by a steel post or on a wall and is to be located adjacent to the major water quality device. The wording and detail is to be approved by Council.

38. Maintenance schedule requirements are to be provided for each of the Stormwater Quality Improvement Devices including the water reuse tank and treatment system.

For bioretention system these are to include the temporary bio-retention system and ultimate bioretention system replacement. Where these devices are located in roadway/parking areas these are to include traffic management requirements. The designer of the stormwater treatment system must prepare the Maintenance schedule and this schedule must show the designer's name, signature and date on it.

During Construction

39. The minimum 18 Standard SpelFilters, 49 Stormsacks and 2 Stormceptors supplied by Spel are not to be reduced in number or capacity, nor replaced with an alternate manufacturer's product.

40. Provide certification prior to placement, that the bioretention filter media ex-bin has:

i. A minimum hydraulic conductivity as defined by ASTM F1815-06 of 250 mm/hr (actual, not predicted

ii. A maximum hydraulic conductivity as defined by ASTM F1815-06 of 700 mm/hr (actual, not predicted).

iii. An Orthophosphate content < 40 mg/kg,

iv. A Total Nitrogen content between 700 mg/kg to1000 mg/kg, and

v. Is not hydrophobic.

41. The filter media in the bioretention area is not to be installed, or plants installed until all the building works, landscaping and driveways have been completed.

42. No fertiliser or additional nutrient material is to be provided to the bioretention basin filter area during planting of the tubestock, or at any time.

Prior to Occupation or Release of Subdivision Plans

43. Provide drainage easements with a Restriction to User over each of the three external discharge points in accordance with the requirements of the Council's Engineering Guide for Development 2005 to ensure a legal point of discharge. The Restriction to User and drainage easement must be registered with Land & Property Information.

44. Provide a Restriction to User and Positive Covenant over the On-Site Detention System in accordance with the requirements of Council's Engineering Guide for Development 2005. The Restriction to User and Positive Covenant must be registered with Land & Property Information.

45. Provide a Positive Covenant over the Stormwater Quality Improvement Devices and Non-Potable Reuse System in accordance with the requirements of Council's Engineering Guide for Development 2005. The covenant requirements are to include the submission of an annual report on water treatment and non-potable water usage by 1 September each year. The Positive Covenant must be registered with Land & Property Information prior to the final occupation certificate.

46. A Geotechnical Engineer is to undertake insitu Saturated Hydraulic Conductivity

Testing of each of the bioretention systems in accordance with Practise Note 1 of the FAWB guidelines. For bioretention systems with a filter area less than 50 m^2, *in situ* hydraulic conductivity testing should be conducted at three points. For systems with a filter area greater than 50 m^2, an extra test point should be added for every additional 100 m^2 or part thereof. Points are to be spatially distributed. Where the hydraulic conductivity of the soil differs from the rate specified in MUSIC of 125 mm/hr (tolerance -5% to 500 mm/hr), remediation works will be required over the filter area to restore the conductivity and the test repeated until the hydraulic conductivity is achieved. A Geotechnical Engineer is to then certify that in accordance with Practise Note 1 of the FAWB guidelines, the Saturated Hydraulic Conductivity is within tolerance to the rate specified in MUSIC for each of the bioretention systems.

47. After the hydraulic conductivity has been certified by the Geotechnical Engineer, a horticulturalist that has relevant tertiary qualifications and technical knowledge with a minimum of five (5) years demonstrated experience is to certify that the planting within the bioretention area including bank areas, is of the same quality in type and quantity as per the construction certificate approved landscape plans, that any plants lost have been replaced and that any areas of scour or disrepair have been restored.

48. Written evidence is to be provided that the registered owner/lessee has entered into a minimum five (5) year signed and endorsed maintenance contract with a reputable and experienced cleaning contractor for the maintenance of the non-potable reuse system, SPEL proprietary devices and bioretention system. A copy of the signed and endorsed contract(s) and maintenance contractor(s) details are to be forwarded to Council's WSUD Compliance Officer.

49. A registered surveyor is to provide a works-as-executed plan of the detention basin and certify that the available storage volumes (ignoring the volumes within the bioretention and sedimentation basins) are at or exceed the design volumes in the 1 in 100 year ARI events.

50. A experienced hydraulic engineer, is to certify that all the non-potable water uses are being supplied and that all the requirements, including irrigation, of the detailed Non-Potable Water Reuse Plan have been installed and are working correctly. Provide a copy of the certification and a signed, works-as-executed Non-Potable Water Reuse Plan to Council.

51. A Civil Engineer registered with NPER, is to certify that:

i. all the requirements of the approved drainage plan have been undertaken

ii. the subsoil drains and bioretention system has been installed with a minimum filter area of 2430 m2, clear of pits, steps and scour protection.

iii. all the layers of the bioretention have been correctly placed and liner installed;

iv. the available water reuse harvesting volume will achieve the 80% reuse efficiency;

v. a minimum 16 Standard SpelFilters, 49 Stormsacks and 2 Stormceptors supplied by Spel have been installed for the site as per the manufacturer's recommendations.

vi. the various orifice sizes match the design diameters from the approved design.

vii. all stormwater safety signage and the interpretative water quality sign have been installed.

Provide a copy of the certification and the works-as-executed drainage plan to Council.

52. A plumber licensed with NSW Fair Trading is to certify that the buildings, or parts of buildings that are not affected by BASIX, comply with the minimum standards defined by the Water Efficiency Labelling and Standards (WELS) Scheme for any water use fittings. Minimum WELS ratings are:

i. 4 star dual-flush toilets;

ii. 3 star showerheads;

iii. 4 star taps (for all taps other than bath outlets and garden taps);

iv. 3 star urinals; and

v. Water efficient washing machines and dishwashers have been used.