

Your ref: MP09_0099 MOD 4 and SSD 6962
Our ref: MC-09-1050

7 September 2015

Planning Services
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Manager – Industry Assessments

Dear Sir/Madam,

Modification to Concept Plan (MP09_0099 MOD 4) and State Significant Development (SSD6962) for 'Calibre' at 60 Wallgrove Road, Eastern Creek

Thank you for your letter, dated 28 July 2015 2012, providing Council the opportunity to comment and provide advice on recommended conditions of consent for the above State Significant Development (SSD). A modification to the existing Concept Plan also forms part of the application.

Council officers have undertaken a review of the SSD, the modified concept approval and the accompanying Environmental Impact Statement (EIS) prepared by JBA, and in principle raises no objection to the proposal subject to appropriate conditions being imposed on any consent granted.

To ensure that a high standard of development is produced, and that the development operates in a manner that will have no adverse impact on the surroundings, it is requested that as part of your assessment consideration be given to the issues raised in **Attachment A** and to the recommended conditions in **Attachment B** to this letter.

Should you have any enquiries or wish to discuss this matter further, please do not hesitate to contact me or Rebecca Gordon, Town Planner on 9839 6222.

Yours faithfully,



Judith Portelli
Manager Development Assessments

ATTACHMENT A

Issues for consideration – SSD 6962 for ‘Calibre’ at 60 Wallgrove Road, Eastern Creek (former Quarantine Station)

TOWN PLANNING MATTERS

1. Signage

Limited signage details have been provided. Standard conditions have therefore been recommended to ensure that any signage visible from the M4 motorway or Wallgrove Road does not distract passing motorists.

2. Landscaping

To address potential visual impacts, the applicant has indicated that tree planting and screening shrubs will be provided along the northern boundary. The width of the landscape setback along the northern boundary, however, has not been nominated. As such, it is unclear if sufficient area has been provided to achieve the level of screening proposed.

It is also unclear how the proposed landscaping along the northern boundary will be accessed and maintained. The submitted landscape plan (drawing no. L006 at Appendix C of the applicant's EIS) indicates that the narrow strip of landscaping will be provided between a retaining wall and the boundary fencing. The effectiveness of the tree planting is therefore questionable, especially given the significant change in levels between the proposed landscape strip and the finished floor level of the buildings. It is therefore recommended that the Department review the landscape arrangements along the northern boundary to ensure that adequate screening will be provided to eliminate any visual impact from the residential areas to the north and that the landscape area will be able to be appropriately maintained at all times.

It is considered that additional screen planting should also be provided adjacent to the M4 road corridor and fronting Wallgrove Road. In particular, tall tree planting should be undertaken along the southern boundary addressing the M4 Motorway. The selected tree species should have a potential height of 15m and should be spaced at 10m centres.

It is recommended that a condition be imposed requiring that the applicant submit a detailed landscape plan prior to release of a construction certificate to address these concerns.

3. Screening

Fire tanks, rainwater tanks and pump rooms are proposed within the M4 Motorway and Wallgrove Road front setback areas. No details of these structures (including size, height, proposed screening, etc.), however, have been provided with the application. It is recommended that a condition be imposed requiring that prior to release of a construction certificate, the applicant is to submit details of the fire tanks, rainwater tanks and pump rooms including fixed solid screening structures which are at least 500mm higher than the overall height of the structures to ensure that they are not visible from any public road or place.

A further condition has also been recommended to ensure suitable screen planting is provided around these structures. However, fixed solid screening must also be provided as landscaping alone has proven to be ineffective in the past.

4. Electricity substation kiosks

Two (2) electricity substation kiosks are proposed in the Wallgrove Road front setback area adjacent to warehouse 1. These substations should be relocated adjacent to the internal access road as per the other substations around the site as access for maintenance by an energy provider along Wallgrove Road presents workplace health and safety (WHS) issues. The SSD application should not endorse the location of any substation within the front setback area unless first endorsed by the energy provider.

In the event any substation is located at the front of the site, a condition has been recommended to ensure that suitable planting is provided to screen the substation from the public road.

5. Retaining walls

The applicant has indicated that retaining walls up to 4.5m in height will be provided as part of the development. Council requires the construction of masonry retaining walls (i.e. no timber walls). The retaining wall should also be in maximum 2 metres high sections and stepped with 1 metre wide minimum planting bays. A standard condition has been recommended to address these requirements, and the appearance and long term maintenance of the proposed retaining walls.

6. Heritage

The applicant has indicated that an Aboriginal Heritage Management Strategy (AHMS) is to be submitted to and approved by the NSW Heritage Office prior to any demolition or excavation works commencing on site. In accordance with Council's letter dated 21 November 2014 it is recommended that the applicant contact the local Aboriginal groups prior to the (AHMS) being prepared. The applicant is required to submit the AHMS for separate approval prior to the issue of a Construction Certificate. This matter should be addressed as a condition of consent.

The applicant has also indicated that an Archaeological Assessment, Heritage Interpretation Strategy and photographic recording of the existing Quarantine Station will be undertaken prior to any demolition or excavation works commencing on site. It is recommended that an appropriate condition be imposed to ensure that this assessment, strategy and recording is approved by the NSW Office of Environment and Heritage prior to the issue of a Construction Certificate.

Standard conditions have been recommended in the event unidentified archaeological object(s) are found during the course of construction.

ENGINEERING/DRAINAGE MATTERS

7. Engineering

The internal road (designed in accordance with a public collector road) is to be constructed by the applicant. A standard condition has been recommended to ensure that all civil infrastructure is undertaken in accordance the information submitted as part of the applicant's EIS and with Council's Engineering Guide for Development – 2005.

8. Drainage

Council officers have reviewed the application and plans by AT&L (reference 12-108, revision B, dated 28 May 2015) and the landscape plans by habitat 8 (revision D, dated 5 June 2015) against Part R of Councils Development Control Plan (DCP) 2006 and the Developers Guide to Water Sensitive Urban Design.

The review indicates that the applicant's drainage plans do not match the MUSIC model and that the waterway stability controls in Council's DCP have not been addressed. The targets under Part R of DCP 2006, however, can be achieved subject to the recommended drainage conditions provided at Attachment B of this letter. The drainage plans will need to be amended to meet the targets under Part R of DCP 2006.

ENVIRONMENTAL HEALTH MATTERS

9. Construction impacts

The environmental impacts will be at their greatest during the construction phase. A standard condition has therefore been included which requires that the applicant submit a Construction Environmental Management Plan before work commence on site.

10. Acoustic impacts

The applicant's acoustic consultant has provided an analysis of noise at the construction phase. A second acoustic report, however, is needed to assess the operation of the site amidst the mechanical plant and equipment selected at detailed design stage. A condition has been recommended to address this matter.

ATTACHMENT B

Recommended conditions of consent – SSD 6962 for 'Calibre' at 60 Wallgrove Road, Eastern Creek (former Quarantine Station)

1 GENERAL MATTERS

1.1 Signage

1.1.1 No general advertising is permitted by this consent.

1.1.2 Any signage visible from a public road must not have or incorporate any of the following:

- i. flashing lights
- ii. electronically changeable or variable messages
- iii. animated displays, moving parts or simulated movements
- iv. complex displays that hold motorists attention
- v. displays resembling or imitating road traffic signs or signals
- vi. a method and level of illumination that distracts or dazzles
- vii. instructions to passing traffic (i.e. 'Halt', 'Stop' or the like).

1.2 Drainage

1.2.1 Each year by the first business day on or after 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.

1.2.2 The development must at all times maintain the water quality system to achieve the following pollutant removal targets of Part R of DCP 2006 for the entire site in perpetuity. This is to include the maintenance of the approved bioretention plant species.

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

Required percentage reductions in post development average annual load of pollutants

2 PRIOR TO ISSUE OF A CONSTRUCTION CERTIFICATE

2.1 Acoustic matters

2.1.1 A report, prepared by a qualified acoustic consultants, is to be submitted confirming that all plant and equipment associated with the operation of the proposed development will meet the Project Noise Criteria as defined within the NSW Environment Protection Authority's *NSW Industrial Noise Policy*. The report is to provide recommendations to mitigate the emission of offensive noise from the proposed development upon sensitive receivers. All recommended attenuation measures are to be included as part of the Construction Certificate details.

2.2 Screening and landscaping

2.2.1 A detailed landscape plan is to be submitted for separate approval prior to release of a Construction Certificate. The plan is to provide the following information:

- i. The width of the landscape setback along the northern boundary, including evidence to demonstrate that sufficient area has been provided to achieve the level of screening proposed.
- ii. Details of how the proposed landscaping along the northern boundary will be accessed and maintained. The submitted landscape plan (drawing no. L006 at Appendix C of the applicant's EIS) indicates that the narrow strip of landscaping will be provided between a retaining wall and the boundary fencing and therefore will be difficult to maintain.
- iii. Additional screen planting adjacent to the M4 road corridor and fronting Wallgrove Road. In particular, tall tree planting should be undertaken along the southern boundary addressing the M4 Motorway. The selected tree species should have a potential height of 15m and should be spaced at 10m centres.

2.2.2 Details of the proposed fire tanks, rainwater tanks and pump rooms within the M4 Motorway and Wallgrove Road front setback areas are to be submitted for separate approval. Fixed solid screening structures must be provided around the tanks and pump rooms, and must be a minimum of 500mm higher than the overall height of the structures to ensure that they are not visible from any public road or place. All details are to be submitted prior to release of a Construction Certificate.

2.2.2 Suitable screen planting must be provided in addition to the solid screening structures to ensure that all maintenance/service facilities, including fire tanks, rainwater tanks, pump rooms and electricity substation kiosks, are suitably screened from any public road or place.

2.3 Fencing

2.3.1 All fencing details are to be submitted prior to release of a Construction Certificate. 2.1m high black palisade fencing, or other decorative fencing as separately approved, must be provided along the boundary of any public road.

2.4 Retaining Walls

2.4.1 Details of any retaining walls including height and material to be constructed on site as part of the development are to be shown on the construction certificate plans. In this regard, Council requires the construction of masonry retaining walls (i.e. no timber walls). All proposed retaining walls shall be in maximum 2 metres high sections and stepped with 1 metre wide minimum planting bays to be landscaped.

2.5 Heritage matters

2.5.1 An Aboriginal Heritage Management Strategy (AHMS) is to be submitted to and approved by the NSW Heritage Office. The applicant is to contact the local Aboriginal groups prior to the (AHMS) being prepared. A copy of the approved AHMS is to be submitted prior to the issue of a Construction Certificate.

2.5.2 An Archaeological Assessment, Heritage Interpretation Strategy and photographic recording of the existing Quarantine Station is to be undertaken. Evidence is to be submitted demonstrating that the assessment, strategy and recording has been approved by the NSW Office of Environment and Heritage prior to the issue of a Construction Certificate.

2.6 Engineering matters

2.6.1 The Civil Infrastructure Engineering Design for the following items is to be undertaken in accordance with Blacktown City Council's Engineering Guide for Development - 2005 and Appendix D of the applicant's Environmental Impact Statement being Mirvac "SSDA Approval Civil Infrastructure Report" and supporting plans prepared by AT&L dated June 2015.

- i. Stormwater Management
 - On Site Detention (OSD)
 - Piped and Overland Flows
 - Water Sensitive Urban Design
 - Sedimentation and Erosion Control
- ii. Infrastructure Services
 - External lead-in services provisioning
 - Signalised intersection on Wallgrove Road and related works
 - Internal services restriction
- iii. Sedimentary and Erosion Control
- iv. Road and Car park Design
 - Internal access road
 - Individual lot car park design etc.

2.7 Drainage

2.7.1 Amended drainage plans from AT&L consultants (reference 12-108, revision B dated 28 May 2015) are to be provided to meet the requirements under Council's DCP Part R 2006 and Council's Engineering Guide for Development 2005. The amended plans must address the following:

- i. The minimum filter media area of 223 m² for the bioretention swale and 1445 m² for the bioretention basin are to be clear of pits and scour protection. Provide dimensions on the plan.
- ii. The eastern catchment does not remove hydrocarbons or oils as part of the treatment train and the bioretention basin needs to be protected from sediment loads that will reduce its effectiveness. Consequently a series of proprietary gross pollutant traps (GPTs) are required on the major inflows into the eastern basin. The GPTs must have oil baffles to retain floatable pollutants, target fine and coarse sediments and be designed for a minimum 6 month treatable flow rate (75% of 1 year ARI). Such GPTs are required downstream of pits A\20 (663 l/s), G\10 (317 l/s) and AQ\4 (118 l/s). The location of the GPTs is to allow for vehicle maintenance access nearby for cleaning the device using an eductor truck.
- iii. Ensure the internal drainage system is design for a minimum of the 20 year ARI storm event.
- iv. For scour protection areas provide dimensions and supporting calculations or nomographs.
- v. On plan DAC031
 - reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
 - obtain written approval from the downstream property owner agreeing to allow access to their site and allowing the installation of the scour protection within their

property. Where such approval is not obtained a stilling basin and level spreader is to be provided fully within the development site to ensure no adverse impact to the downstream property.

- vi. On plan DAC032
 - reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
 - there are insufficient access grates for the below ground detention tank and Stormfilter chamber. 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 6 m.
- vii. On plan DAC033 reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
- viii. On plan DAC034 reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
- ix. On plan DAC035 reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
- x. On plan DAC036
 - reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
 - provide the GPT downstream of pit A\20 and show eductor access location.
 - provide a minimum 400 mm deep Raingarden Sediment Forebay (concrete base with seepage holes) as part of the scour protection at A\21.
 - provide a minimum 3 m wide concrete vehicular accessway at maximum 10 % grade down to the northern end of bioretention basin to allow for maintenance.
- xi. On plan DAC037 reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
- xii. On plan DAC038 reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system, except for the south west corner of warehouse 4 which discharges to the Eastern catchment.
- xiii. On plan DAC039
 - reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
 - provide the GPT downstream of pit G\10 and AQ\4 and show eductor access location. Note these two could be combined into a single discharge with GPT.
 - provide a minimum 400 mm deep Raingarden Sediment Forebay (concrete base with seepage holes) as part of the scour protection at G\11 and AQ\5.
 - delete the subsoil spur lines discharging to the main spur line flushing points and the line from G\11.
- xiv. On plan DAC041
 - reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system, except for the south west corner of warehouse 4 which discharges to the Eastern catchment.
 - provide a detail for the gaps in the kerbs adjacent to the bioretention swale. Ensure a minimum of 35% openings in the kerb.
 - provide jute mat and dense planting over the batter slope to resist scour.
 - extend the scour protection for each piped outlet (if required) down to the swale.
- xv. On plan DAC042
 - reconfigure the drainage for 50% of roof water to discharge direct to the rainwater tanks and not to the surface drainage system.
 - provide for gaps in the kerbs adjacent to the bioretention swale. Ensure a minimum of 35% openings in the kerb.

- provide jute mat and dense planting over the batter slope to resist scour.
- extend the scour protection for each piped outlet (if required) down to the swale.
- provide a minimum 400 mm deep Raingarden Sediment Forebay (concrete base with seepage holes) as part of the scour protection at J\7.
- provide a minimum 3 m wide concrete vehicular accessway at maximum 10 % grade down to the southern end of bioretention basin to allow for maintenance.

xvi. On plan DAC083

- Ensure all the access points to the Stormfilter chamber and energy dissipation areas are grated with metal mosquito screen permanently attached to the standard grate.
- there are insufficient access grates for the below ground detention tank and Stormfilter chamber. 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 6 m.
- provide step irons to all access points.
- Confined space entry warning signs are to be detailed adjacent to all entries into the detention tank and Stormfilter chamber.
- the Stormfilter weir is to be set a minimum of 770 mm above the false floor.
- reduce the low flow orifice from 320 mm to 300 mm diameter.

xvii. On plan DAC084

- On the Plan provide a minimum 400 mm deep Raingarden Sediment Forebay (concrete base with seepage holes) as part of the scour protection at A\21, J\7, G\11 and AQ\5.
- On the Plan delete the two 0.9 x 0.9 raised grated junction pits.
- On the Plan delete the note on the 225 mm pipe to "CAP OFF PIPE AT ENDS" and provided flushing points instead.
- On the Plan delete the four 225 mm spur lines that join the central 225 mm subsoil line.
- On the Plan provide flushing points at the end for each 100mm subsoil line and intermediate flushing points for the 225 mm subsoil pipe at maximum 25 m spacing.
- On the Plan provide a new 900 x 900 sealed pit that the 225 mm subsoil pipes connect to. This pit is to discharge independently to the external pit in the external swale and not to the discharge control pits
- On the Plan extend the scour protection from the 100 year overflow weir down and into the external swale. Within Council lands the scour protection is minimum $d_{50} = 400$ mm.
- On section 1 adjacent to the retaining wall, extend the filter media and two drainage layers up to the retaining wall. Show riser. The filter media adjacent to the embankment is to be designed vertically.
- On section 1 the subsoil drains within the bioretention gravel bed are to be un-socked slotted PVC laid at minimum 0.5% with a minimum 50 mm gravel cover over the subsoil.
- On section 1 delete the connection of the 225 mm subsoil pipe to the 1.2x1.2 raised grated pit.
- On section 1 increase drainage layer B to 250 mm.
- On section 1 at pit Z\1 reduce the 590 mm orifice to 560 mm diameter.
- On section 1 provide a 900 mm pipe from Z\1 to Z\2.
- On section 1 reduce the high flow pit level at Z\2 to RL 49.25.
- On section 1 provide a 200 mm wide concrete cutoff wall at the centre of the 100 year spillway extending a minimum of 800 mm deep plus footing to provide a level weir and limit seepage flows.
- Provide a detail of a subsoil riser for flushing and maintenance of the subsoil collection pipe. The riser is to include two 45° 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

- xviii. Provide Floodway Warning Signs for the detention basin, bioretention swale and bioretention basin in accordance with Plan A(BS)114S from Council's Engineering Guide for Development 2005.
 - xix. Where charge systems are required to discharge to the rainwater tank a charge line cleanout line shall be provided. The charge line cleanout is to be located at the lowest point in the system in a pit a minimum of 10 m from the last connection. Provide a screw cap with 20 mm dribble hole for the charge line cleanout. Confirm the effective operation (HGL) of the charge system using DRAINS.
 - xx. Demonstrate that the external swale will drain naturally and not be blocked by any filling from the development.
 - xxi. A civil engineer, registered with NPER, is to assess the design of the detention basin and determine whether there is any existing or future population at risk should the basin fail. Where there is any existing or future population at risk the basin must be referred to the Dam Safety Committee for any requirements. Such requirements are to be implemented.
- 2.7.2 Revised landscape plans are required from habitat 8 that include appropriate species for the bioretention systems in accordance with the BCC Handbook Part 5 - Vegetation Selection Guide (October 2012) for the filter media depth of 500mm. 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 8 different species is required for the bioretention swale and twelve different species for the bioretention basin, all planted as a matrix. All plants within the filter area are to be planted from tubestock, or virotube and not pots. The planting schedule on L0003 is to be revised to include separate planting schedules for the bioretention swale and bioretention basin. About half the species currently nominated for the Detention Basin/Swales are unacceptable to Council due to type or size. No stone or organic mulch is permitted within the bioretention filter area, but Jutemat or jutemesh is permitted.
- 2.7.3 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.
- 2.7.4 Details are to be provided for permanent interpretive signage minimum A1 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.
- 2.7.5 Maintenance schedule requirements are to be provided for each of the Stormwater Quality Improvement Devices including the rainwater tank. 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. The maintenance schedule is to clearly differentiate between the bioretention systems and other landscape areas. No stone or organic mulch, nor any fertiliser is to be applied to the bioretention areas at any time.

- 2.7.6 Section 4.5 of the at&I Civil Infrastructure Report of June 2015 is to be revised to ensure that a minimum of 80% of non-potable water uses within the site is met through rainwater assessed using the Node Water Balance function in MUSIC based on:
- i. A separate rainwater tank being provided for each warehouse collecting flow from a minimum of 50% of the roof area, excluding the area of south lot 3.
 - ii. Allow for internal rainwater reuse of 0.1 KL/day per toilet or urinal. However where site is occupied say 6 days per week the daily usage rate can be multiplied by 6/7.
 - iii. Allow for an annual demand for watering landscaped areas (excluding turf areas) of 0.4 kL/year/m² as PET-Rain. For bioretention filter areas only allow 1 kL/year/m² as PET-Rain. Note that it is unacceptable to agglomerate the landscape watering into the rainwater reuse daily demand. Nominate which specific tank will be watering the bioretention area.
 - iv. Allow for any other non-potable use on site such as vehicle washing or certain air conditioning units.
 - v. Allow on the design plans for a 20% increase in rainwater tank size volume to that shown in MUSIC to allow for anaerobic zones, mains water top up levels and overflow levels. e.g. where a 40,000 L tank is modelled in MUSIC it is to be specified on the drainage plan as 50,000 L.
- 2.7.7 Revised MUSIC modelling is required to achieve Council's pollution removal targets with the changes nominated above. The extended detention depth for the bioretention swale is to be modelled as zero.
- 2.7.8 Provide a section within the at&I Civil Infrastructure Report for an assessment of the Stream Erosion Index (SEI) for the site using the method in Council's MUSIC Modelling Guide within the WSUD Handbook. When preparing the modified MUSIC model the Extended Detention Depth of the Bioretention Swale is to be zero and the detention basins could be included if required with $k = 0$. The SEI is not to exceed 3.5.
- 2.7.9 The retaining walls adjacent to the bioretention basins are to be designed and certified by a Structural Engineer registered with NPER to allow for future excavation of the bioretention basin to be self-supporting (allowing for overturning and sliding), where the basin media including the gravel is removed and replaced for maintenance.
- 2.7.10 An experienced hydraulic engineer is to prepare and certify a detailed Rainwater Reuse Plan for non-potable water uses (including all toilet flushing and landscape watering) on the site. The plan is to show the rainwater pipe arrangement including pre-treatment system, pump, mains water direct tank top up, isolation valves, flow meters for all mains water inflows, or solenoid controlled mains water bypass (if applicable) and non-potable usage outflows, a timer for landscape watering, an inline automatic backwash filter and certify that all Sydney Water requirements have been satisfied. A solenoid controlled mains water bypass is only permitted for toilet flushing and where fitted, landscape watering or other reuse must only use pump water and be on a separate reuse line, independent to the toilets and their solenoid backup. Where a solenoid controlled mains water bypass is not fitted, a manually operated bypass is to be provided for the toilets independent of landscape watering or other reuse. Provide a warning light to indicate pump failure. All rainwater reuse

pipes are to be coloured purple. Rainwater warning signs are to be fitted to all external taps where rainwater is used as a source.

- 2.7.11 Provide a detailed Landscape Watering Plan by an experienced irrigation specialist showing the layout of filters, flow meters, timers, taps and pipes and the use of sprinklers or drip irrigation. The system is to be designed to automatically achieve a minimum usage rate of nominated in the Construction Certificate as nominated in MUSIC (bioretention areas to achieve an average annual usage rate of 1 kL / year / m² of filter area). This is the average usage throughout the year and the system needs to be adjusted to allow for monthly seasonal variations e.g. the flow rate in December is to be designed to deliver a 50% increase above the average yearly flow. All rainwater reuse pipes are to be coloured purple. Rainwater warning signs are to be fitted to all external taps where rainwater is used as a source.

3 PRIOR TO DEVELOPMENT WORKS

3.1 Environmental matters

- 3.1.1 Prior to the commencement of works, an appropriately qualified person is to submit an Environmental Management Plan (EMP) for review and separate approval. The operational measures should include but not be limited to:
- proposed hours of work
 - proposed schedule of works
 - noise and vibration controls
 - dust (air quality) management strategy
 - hazardous building materials survey
 - procedures for validation of imported fill material and the proposed means of disposing overburden
 - waste and materials re-use on-site
 - community response and management procedure outlining the course of action to be undertaken following receipt of a complaint
 - proposed means of controlling of any activity that could potentially cause a pollution incident as defined by the Protection of the Environmental Operations Act 1997.

4 DURING CONSTRUCTION

4.1 Drainage

- 4.1.1 The 110 Stormfilters with 690mm cartridges and minimum fifty-eight 200 micron Enviropods supplied by Stormwater 360 are not to be reduced in size or quantity, nor replaced with an alternate manufacturer's product.
- 4.1.2 Provide certification ex bin from the material supplier prior to placement, that the bioretention filter media 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 < 1000 mg/kg
 - v. Is not hydrophobic.
- 4.1.3 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.

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

4.2 **European Heritage**

- 4.2.1 If, during the course of construction, the applicant or persons acting on this consent become aware of any previously unidentified heritage object(s), all work likely to affect the object(s) shall cease immediately and the Heritage Council of New South Wales shall be notified immediately in accordance with section 146 of the *Heritage Act 1977*. Relevant works shall not recommence until written authorisation from the Heritage Council is issued.

4.3 **Indigenous Heritage**

- 4.3.1 If, during the course of construction, the applicant or persons acting on this consent become aware of any previously unidentified Aboriginal object(s), all work likely to affect the object(s) shall cease immediately and the NSW Office of Environment & Heritage informed in accordance with Section 89A of the *National Parks and Wildlife Act 1974*. Relevant works shall not recommence until written authorisation from the NSW Office of Environment & Heritage is received by the Applicant. In addition, a member of each of the Western Sydney Aboriginal Stakeholder Groups is to be contacted.

5 **PRIOR TO ISSUE OF AN OCCUPATION/SUBDIVISION CERTIFICATE**

5.1 **Drainage**

- 5.1.1 A Restriction to User and Positive Covenant is to be provided over the Stormwater Quality Improvement Devices and Rainwater Tanks 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 the first business day on or after 1 September each year. The Restriction to User and Positive Covenant must be registered with Land & Property Information prior to the final occupation certificate.
- 5.1.2 A Restriction to User and Positive Covenant is to be provided 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.
- 5.1.3 A drainage easement with a Restriction to User is to be provided over each lot with an interallotment drainage line or detention and water quality treatment system to the extent of the 1 in 100 year ARI storage in accordance with the requirements of Council's Engineering Guide for Development 2005. The easement is to be in favour of all upstream properties draining through it. The Restriction to User and drainage easement must be registered with Land & Property Information.
- 5.1.4 Where the road is to be dedicated to Council as public roadway the following is to be provided:
 - i. A minimum 2.5 m wide drainage easement with a Restriction to User in favour of Council over the centreline of the proposed stormwater pipe draining the road water through private property to the discharge point as per the Engineering Guide for Development. The Restriction to User and

- drainage easement must be registered with Land & Property Information.
 - ii. A drainage easement with a Restriction to User in favour of Council over the extent of detention basins up to the 1 in 100 year extents. The Restriction to User and drainage easement must be registered with Land & Property Information.
 - iii. A positive covenant requiring all maintenance and or replacement of the pipeline and drainage systems draining the public road to be undertaken by the property owner, with no obligation for the maintenance of such systems by Council. Such wording to be approved by Council. The positive covenant must be registered with Land & Property Information.
- 5.1.5 Where the lots are to be subdivided a community title is to be provided to ensure the cost of maintenance of the water quality systems and detention systems are shared proportionally based on site area for all lots benefitting from such systems, excluding Council. The community title must be registered with Land & Property Information.
- 5.1.6 Where the lots are to be subdivided, reciprocal rights of carriageway are to be provided over all shared accessways, or a right of carriageway where access is required over one lot for the benefit of another lot.
- 5.1.7 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 Stormfilter basins) are at or exceed the design volumes in the 1 in 100 year ARI events.
- 5.1.8 A Civil Engineer registered with NPER, is to certify that:
- i. all the requirements of the approved drainage plan have been undertaken.
 - ii. the bioretention system has been installed with a minimum total filter media area of 223 m² for the bioretention swale and 1445 m² for the bioretention basin clear of pits and scour protection.
 - iii. The bioretention systems having a minimum of 500 mm of filter media, a 100 mm transitions layer and a minimum 200 – 300 mm gravel layer with liners.
 - iv. The bioretention subsoil lines are un-socketed slotted PVC laid at minimum 0.5%.
 - v. That for the eastern catchment a minimum detention storage of 2370 m³ has been provided below the overflow weir at RL 49.60 excluding the bioretention storage below RL 48.45.
 - vi. That for the western catchment a minimum detention storage of 3610 m³ has been provided below RL 50.87 excluding the overflow weir area and Stormfilter storage.
 - vii. a low flow orifice of 300 mm was provided for the western catchment and a low flow orifice of 560 mm was provided for the eastern catchment.
 - viii. the rainwater tanks have been provided as per the approved construction certificate plans collecting all of the roof area.
 - ix. all the signage and warning notices have been installed.
 - x. any proprietary water quality devices have been installed for the site as per the manufacturer's recommendations.
- A copy of the certification and the works-as-executed drainage plan is to be provided to Council.
- 5.1.9 Stormwater 360 is to certify for the installation of the 200 micron Enviropods and 690 mm Stormfilters that:
- i. It is in accordance with the standard operational guidelines and production drawings.

- ii. It includes a baffle 400 mm below and 250 mm offset from the Stormfilter weir to retain floatables including oils.
 - iii. The Stormfilters have a minimum flow rate of 176 l/s.
 - iv. Metal mosquito proof screens have been provided to all grated accesses into the Stormfilter tank.
 - v. A minimum of fifty-eight 200 micron Enviropods have been fitted.
- 5.1.10 Provide a minimum 1 m wide drainage easement with a Restriction to User over each lot with an interallotment drainage line in accordance with the requirements of Council's Engineering Guide for Development 2005. The easement is to be in favour of all upstream properties draining through it. The Restriction to User and drainage easement must be registered with Land & Property Information.
- 5.1.11 A Geotechnical Engineer is to undertake insitu Saturated Hydraulic Conductivity Testing of each of the bioretention systems in accordance with Practice Note 1 of the FAWB guidelines. Provide a minimum of three tests for systems with a filter area up to 100 m² and an extra test point should be added for every additional 100 m² of filter area. 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 -15% to +400%), remediation works will be required over the whole 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 Practice 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.
- 5.1.12 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.
- 5.1.13 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 bioretention systems, gross pollutant traps, Enviropods, Stormfilters and any other Stormwater quality devices. A copy of the signed and endorsed contract(s) and maintenance contractor(s) details are to be forwarded to Council's WSUD Compliance Officer.
- 5.1.14 A plumber licensed with NSW Fair Trading, or experienced hydraulic engineer, is to certify that all the non-potable water uses are being supplied by rainwater and that all the requirements of the detailed Rainwater Reuse Plan have been installed and are working correctly. A signed, works-as-executed Rainwater Reuse Plan are to be provided to Council's WSUD Compliance Officer.
- 5.1.15 An experienced irrigation specialist is to certify that all the requirements of the detailed Landscape Watering Plan have been installed as per the approved plan and are working correctly. A signed, works-as-executed Landscape Watering Plan is to be provided to Council's WSUD Compliance Officer.
- 5.1.16 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.