

ID	Council's Original Comments	JWP Comments	Council's Response
1.	Statement of Environmental Effects Not Reviewed	Noted	Nil
2.	Aboriginal Heritage Assessment Not Reviewed	Noted	Nil
3.	Bushfire Hazard Assessment report Not Reviewed	Noted	Nil
4.	Contamination Review Not Reviewed	Noted	Nil
5.	Ecology Assessment Not Reviewed	Noted	Nil
Engineering and Subdivision Plans			
6.	Plan9065/DA102 indicates a batter to be placed across the creek. At 4:1 this would be too steep to be stable. An alternate stabilisation measure is required.	The batter referred to by Council is proposed as a <u>temporary</u> batter to support the road works forming the edge of the roundabout. This would not extend across the creek. Alternatives to the temporary treatment might include more permanent rock retaining walls or construction of the abutment for the future bridge in this location. This issue can be addressed by attaching an appropriate condition to any consent granted with the solution to be detailed with the Construction Certificate.	Can be conditioned

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7.	Plan 9065/DA103 (and other sheets) shows stacked rock retaining walls with a maximum height of 3m. At any locations where these retaining walls are proposed:		
a.	The wall is to be designed and certified by an NPER registered engineer giving due consideration to the loads being imposed by the fill and the road being supported including provision for access for maintenance vehicles to clean any water quality measures. The design life for the retaining wall is to be 100 years.	Agreed. This requirement can be addressed by attaching an appropriate condition to any consent granted.	Can be conditioned
b.	All walls are to be non-climbable.	The walls proposed are stacked sandstone boulders, and as such could be climbable. These types of walls are used all over Sydney to deal with level changes between a subdivision and bushland, riparian corridors or as features in open space areas. The only non-climbable wall will involve construction of vertical "engineered" walls such as concrete which would be unacceptable environmentally. Attached at the end of this memo are some photographs where similar walls have been used in riparian corridors and as landscape features in open space areas.	Stackable rock may be appropriate in locations where the maximum height of the wall is small. Where the height exceeds fall height requirements appropriate treatments are to be used to render the wall non-climbable or inaccessible. This can be conditioned. The examples provided may not be applicable to the walls proposed which are up to 3m high.
c.	Any rock to be used in the retaining walls is to be certified as suitable for the required design life.	Agreed. This requirement can be addressed by attaching an appropriate condition to any consent granted.	Can be conditioned

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d.	The riparian areas are to be assessed against CPTED principles to ensure that all areas can be monitored by passive surveillance	Agreed. This requirement can be addressed by attaching an appropriate condition to any consent granted.	Can be conditioned
e.	Safety of vehicles which could leave the road is to be assessed and appropriate barriers installed.	The kerb to the bushland park will be a raised barrier/kerb 200mm in height to prevent cars leaving the carriageway. It is considered no other barriers will be required. However, this will be confirmed at the Construction Certificate stage against Austroads requirements as is typically the case. Council can, if it wishes, confirm this requirement by attaching an appropriate condition to any consent granted.	Condition of consent should be applied requiring a Road Safety Audit to be undertaken and any measures identified constructed.
f.	Safety of pedestrians with respect to fall height is to be assessed at all locations where retaining walls are provided.	Agreed. Pedestrian fencing/barriers will be detailed with the Construction Certificate. Council can, if it wishes, confirm this requirement by attaching an appropriate condition to any consent granted.	Condition of consent should be applied requiring a Road Safety Audit to be undertaken and any measures identified constructed.
8.	Plan 9065/DA104 indicates a drop structure to be installed in (or in close proximity to) the gas easement. Details are to be provided taking into account any requirements by Jemena in this regard.	The area identified by Council is outside of the site boundary and is in RMS road reserve. The Construction Certificate plans will not show any works outside of the site boundary. By way of comment Landcom and Jemena have undertaken a comprehensive Risk Management Workshop and Jemena fully understand the nature of all works that will occur within the easement. Landcom and Jemena are currently in the process of negotiating a licence agreement for these works.	Noted
9.	Plan 9065/DA104 shows raingardens. The tailouts from these pits is to extend to the creek invert and include any required scour protection.	This requirement can be addressed by attaching a condition to any consent granted consistent with the requirements of Office of Water.	Can be conditioned. Note however that Office of Water comments will be considered, however, Council will own and maintain this creek, so Council's requirements will not be usurped by those of the Office of Water.

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10.	Plan 9065/DA104 indicates future discussions with OEH regarding creek realignment. These discussions must include Council as the future manager/owner of this system.	Noted.	Noted
11.	Plan 9065/DA104 all raingardens and GPT devices must be accessible for regular maintenance and reconstruction. All weather accesses are to be provided in this regard.	GPT's will be positioned at road level wherever possible. An all-weather track access will be provided to all raingardens for maintenance purposes, typically combined with a cycleway within the bushland park. The details of this will be included in the Construction Certificate plans and incorporated in the landscape DA for the bushland park.	Can be conditioned
12.	Plan 9065/DA105 see comments for 9065/DA104	Noted. See Comments above.	Can be conditioned
13.	Plan 9065/DA106 shows road profiles. Typical section Road Edge No.10 Park Edge shows a 200mm high kerb. This may be OK to prevent vehicles mounting the kerb, but explanation should be provided.	It is unclear what further explanation is required. The proposed 200mm high kerb is proposed to prevent cars from leaving the carriageway and higher than Council's standard kerb at 150mm high. There are higher kerb heights that could be installed but which are inappropriate for a suburban residential outcome. As noted in the comment for Item 7e this will be assessed against Austroads standards for safety at the Construction Certificate Stage.	Condition of consent should be applied requiring a Road Safety Audit to be undertaken and any measures identified constructed.

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14.	Plan 9065/DA106 indicates footpaths on both sides of most streets. This is considered excessive in most instances, though will be warranted around the UWS campus. Council requests that rationalisation of the footpaths occurs.	Proposal is consistent with Landcom Street Design Guidelines where at s2.4: <i>Provide footpaths on both sides of the street (unless the street is a share-way for vehicles, pedestrians and cyclists, or if the vehicular traffic levels are very low) to provide equal amenity.</i> The Guidelines go on to provide justification where "the local council does not support additional footpaths due to their maintenance cost", as follows:- <i>"Continuous footpaths are essential for walkable neighbourhoods. Grass is often uncomfortable or unsafe to walk on and cannot be negotiated by people with prams and less able people. Where footpaths are provided on both sides of the street people are less inclined to walk on the carriageway and they need to cross less often, thereby improving pedestrian amenity and safety..."</i> In addition the proposed footpaths on both sides of most streets is consistent with Council's requirement at the Edmondson Park project. It is not agreed a rationalisation is required.	Higher order roads are to have footpaths on both sides. Lower order roads to have footpath on one side only. Development should be conditioned to achieve this outcome. Reasoning: Council does not have the budget to maintain such high level of footpath provision and ensuring at least one side of the road has a footpath provides a safe off pavement location for pedestrians.
15.	Plan 9065/DA107 shows lots on the top of the hill in Stage 1B which will have rear fences onto open space and in some locations side fences onto pathways. The applicant needs to detail how these lots will be managed to prevent rear fences dumping and to afford privacy and security to these lots.	The landscape outcomes for main ridge park developed by Clouston propose a pedestrian path to follow the ridge line (approximately in the centre of the park) and mass planting on the batter between the path and rear boundary. This is designed to prevent people accessing the areas adjacent to the rear boundary and therefore addresses privacy and security concerns. With regard to the pathways, dwellings will be sited to encourage passive surveillance through Design Guidelines. It is difficult to identify a reason or circumstance where dumping of rubbish would occur either by the owners of the property (given the rear fence will be located behind a 1.5m retaining wall) or motivation by students to dump garbage over the fence given garbage bins provided in the campus. However, or whatever motivation, it should be recognised that this is not likely to be an issue given passive surveillance by users of open space and presence of UWS 24 hour security which will remain within the confines of the campus.	Can be conditioned.

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16.	Plans 9065/DA109-DA118 show the cut and fill proposed for the site. It is noted that these works are extensive and appropriate safeguards are to be imposed as conditions of consent to ensure that the fill areas are managed to appropriate standards and the runoff is managed during the works to minimise impacts to the environment.	This requirement can be satisfied by attaching an appropriate condition to any consent granted.	Can be conditioned.
17.	Plan 9065/DA128 indicates rock benching at a proposed future culvert crossing. Immediately upstream and downstream of all culvert crossings is to be concrete to minimise the possibility of plants growing in this area and compromising culvert performance.	The requirements of the NSW Office of Water are in conflict with the Council comments, which require the use of rock to bring the stream to a more naturalised environment. This has been consistently applied to all upstream and downstream culverts, as well as on the inverts since the mid-1990's, consistent with the requirements of the Office of Water. This requirement of Council would be inconsistent with the NSW Office of Water.	Council requires a hard stand area immediately upstream and downstream of the culvert to ensure that flooding issues are not made worse by the blockage of the culvert, and to deter any vegetation growth which might block the outflows. Notwithstanding, it should be conditioned that the developer to ensure the proposed outlet treatment should be consistent with both Council and NSW Office of Water requirements.
18.	Plan 9065/DA129 shows a 3.2m high drop occurring over a distance of less than 15m along Creek No.2. Details of scour protection in the vicinity of the drop and all other areas with high predicted velocities will need to be provided.	The area identified by Council is outside of the site boundary and is in RMS road reserve lands (See Comment to Item No 8). Scour protection will be shown on all drop structures within the creek line on the site on the Construction Certificate drawings as per the requirements of the Office of Water. Council can, if it wishes, confirm this requirement by attaching an appropriate condition to any consent granted.	Can be conditioned.

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19.	Plan 9065/DA130 shows the typical rock retaining wall detail. This is considered inadequate. See previous comments.	Further details and structural certification will be provided in CC plans as previously indicated. As stated, previously the requirement can be addressed by attaching an appropriate condition to any consent granted (See Comment to Item No 7c).	Can be conditioned.
20.	Plan 9065/DA130 shows details for the bio-retention systems. These would not appear to accord with Standard Drawings issued by the Sydney Metro CMA. While not conclusive the following comments indicate some of the issues which will need to be addressed	The following is provided to pre-empt matters typically contained in Construction Certificate where it conclusively deals with the matters raised. Council can, if it wishes, confirm all requirements by attaching an appropriate condition to any consent granted.	Can be conditioned.
a.	Details of how the flows in excess of the 1 year ARI are managed to the creek.	Splitter pits will be provided to direct 1 year ARI flows to the basin with those flows in excess being directed to the riparian corridor. Full details to be provided as part of the Construction Certificate documentation.	Can be conditioned.
b.	Loose packed rock is not considered suitable to provide a design life of 100 years as required for all drainage infrastructure.	The items raised on scour protection, flushing point locations and raised pit will all be provided as part of the Construction Certificate documentation.	Original comment stands. Can be conditioned.

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c.	Areas in close proximity to culvert entrances and exits are to be constructed of materials that will not allow plant growth to occur and block the culvert performance.	Same as Item No 17. This is not a requirement of CMA.	Council requires a hard stand area immediately upstream and downstream of the culvert to ensure that flooding issues are not made worse by the blockage of the culvert, and to deter any vegetation growth which might block the outflows. Notwithstanding, it should be conditioned that the developer to ensure the proposed outlet treatment should be consistent with both Council and NSW Office of Water requirements.
d.	Scour protection is to be provided in all locations where pipes enter the raingardens or the creek	The items raised on scour protection, flushing point locations and raised pit will all be provided as part of the Construction Certificate documentation.	Can be conditioned.
e.	Easily accessible flushing points are to be provided for all subsoil drains.	The items raised on scour protection, flushing point locations and raised pit will all be provided as part of the Construction Certificate documentation.	Can be conditioned.
f.	Extended detention pit should be raised to provide extended detention.	The items raised on scour protection, flushing point locations and raised pit will all be provided as part of the Construction Certificate documentation.	Can be conditioned.
g.	Alternatives to downstream batters for rain gardens and bio-retention systems are to be considered. Council would prefer constructed walls that will guarantee performance without scour and not require vegetated batters to be maintained.	The batters will be designed for scour protection and landscaping consistent with the Office of Water requirements and overarching philosophy to bring riparian corridors into a naturalised state. This is not a requirement of CMA. The batters have been accepted and performed appropriately in these environments, consistent with Office of Water requirements. Final landscaping of the batters will consider Council's comments.	Original comments stand. Can be conditioned.

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21.	Plan 9065/DA131 shows the creek realignment and rehabilitation plans. Council is concerned with the longevity of the proposed works. In particular the coir logs and jute mesh would appear to have a very limited life. If these are only temporary measures during establishment, this may be appropriate. The stakes proposed to hold the logs in place may pose a trip hazard. The extent of vegetation and the batter slopes shown on the plans appears at odds with the HEC-RAS modelling which indicates planting to achieve a Manning's "n" of 0.1 and batters of 5H:1V. The specifications for the timber logs will need to be provided.	J Wyndham Prince confirms that the arrangement shown on plan will be undertaken during the construction of the corridor and is only temporary. The final landscape treatment will be subject to separate DA and will encompass revegetation and bush regeneration suitable for the remnant Cumberland Plain Vegetation. Manning's 'n' of 0.1 has been adopted for the final landscaped corridor. Details will be provided with the Construction Certificate documentation.	Original comments stand. Can be conditioned.
22.	Plan 9065/DA132 shows details of locations of the interim sediment basins. The bio-retention raingardens are not to be used as construction stage erosion and sediment control basins. These basins are to be relocated.	The Campbelltown DCP does not specify that multiple devices are required to manage the erosion and sediment requirements but references the "Blue Book" as the document that should govern these controls. It is standard engineering practice to utilise the location of the proposed detention basin or raingarden for the control of sediments during construction. This approach is recommended in a number of publications such as CSIRO's Water Sensitive Urban Design (WSUD) Engineering procedures, WSUD Technical Design Guidelines for South East Queensland and the Blue Book. At Landcom's Edmondson Park development, Council has agreed that raingardens are to be used as sediment basins until 90% dwellings complete and then planted out as raingardens. J Wyndham Prince disagrees with this comment by Council.	This means minimal water quality treatment is achieved until 90 % development can be reached. Given the high value of the environmental corridors the development should be conditioned to demonstrate that Water Quality Objectives will be met at all times.

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23.	Plan 9065/DA134 shows the vegetation to be retained and that to be removed. Given the details in the preceding plans, it would appear unlikely that the creek line vegetation identified as being retained will actually be retained as there are significant works required in the creek.	The vegetation identified for retention on Plan 9065/DA134 contains remnants of Cumberland Plain Woodland (CPW) tree species but is largely dominated by African Olive (See Ecological Report). The plans should not be interpreted to suggest a conflict in the works and areas of CPW vegetation to be retained. As with all works, any trees required to be preserved near areas of work will be identified and included in a Construction Management Plan (CMP) with safeguards for its retention. The CMP can be provided with Construction Certificate documentation.	Can be conditioned.
24.	Plan 9065/DA202 shows the overall layout for Goldsmith Drive. There are numerous comments indicating "existing catchment bypass pipe". As previously advised, as Goldsmith Drive provides the only access to the site (in the short term), this access must be flood free up to the 100 year ARI event. All of these crossings must be demonstrated to meet this criteria with appropriate blockage factors applied. Additionally, all longitudinal drainage on Goldsmith Drive must also be designed for 100 year ARI capacity with blockage as per Council's Sustainable City DCP Volume 2.	These details are typically provided with the Construction Certificate documentation. Council can, if it wishes, confirm this requirement by attaching an appropriate condition to any consent granted.	Can be conditioned.

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25.	Plan 9065/DA202 shows stacked rock retaining walls. Please see comments for Plan 9065/DA103 in this regard.	See Comment for Item No. 7	Stackable rock may be appropriate in locations where the maximum height of the wall is small. Where the height exceeds fall height requirements appropriate treatments are to be used to render the wall non-climbable or inaccessible. This can be conditioned. The examples provided may not be applicable to the walls proposed which are up to 3m high.
26.	Plan 9065/DA202 shows two raingardens (Raingarden East and Raingarden West). Are these to be privately managed by the University? Council will need to sign off on the Operation and Maintenance Manual for these facilities. Off road facilities for maintaining GPT's and the raingarden are to be provided.	The raingardens shown on the plans have been sized to accommodate and treat drainage for sections of Goldsmith Ave. J Wyndham Prince is examining opportunities to relocate these to an area adjacent to the Macarthur Gardens North development. If the basins stay in their current location then it is likely the basins be managed by Council and the land dedicated as part of the road reserve. It is anticipated that the location, maintenance and ownership of the basins necessary to treat stormwater from Goldsmith Ave will be resolved with the Construction Certificate documentation. Whichever the outcome, operation and maintenance manuals will be provided.	A flood Study needs to be undertaken to obtain flows to size these basins. A flood assessment needs to be approved by Council before the lodgement of construction certificate.
27.	Plan 9065/DA203 shows a temporary access to Gilchrist Oval being provided via a layback and crushed sandstone driveway. This is not considered appropriate and as the owner of the Macarthur Gardens site is Landcom, Technical Services would recommend that a more suitable solution is negotiated.	The current access road to Gilchrist Oval is a gravel track and an application is shortly to be lodged to commence filling Macarthur Gardens North for future development. The gravel track is considered appropriate. A one coat bitumen sealed path could be provided. However, this should only be constructed after completion of earthworks in this area.	May need some comments from John Millicic. Not sure what Council's rights to access are over private property.

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28.	Plan 9065/DA204 – 205 show the road sections for Goldsmith Ave. Landscaping works are to be coordinated and appropriate species selected to ensure that there will not be future issues with the street lighting.	As Council has been advised, Clouston has been engaged by Landcom as the landscape architect on this project. Clouston has already reviewed tree planting along Goldsmith Ave to address street lighting.	Council is currently preparing a Guide for Public Domain Plantings which will provide a two tier approach to road and open space vegetation strategies. A deemed to comply solution will specify plants from an approved Council list and install these in an approved manner and location. Alternative solutions will be considered where they can demonstrate that they will meet Council's operational and maintenance requirements. Council has been working with Cloustens to ensure that the proposals meet these requirements.
29.	Plan 9065/DA204-205 shows the lane widths on Goldsmith Ave for a length of 1072m varying from 3.5m – 3.2m – 4.8m – 3.2m – 3.5m. While acknowledging that the traffic environment is different at these locations, the variations should be limited to those locations where change is absolutely necessary to avoid confusion.	The road configuration has been proposed based on detailed workshops with specialist road safety. No issues were raised by the road safety auditors in respect the varying road widths. Landcom has commissioned and received an independent road safety audit which considers the road width and this aspect was examined and not identified as an matter that required amendment or further work. It is not agreed that there will be confusion.	Noted. Road Safety Audit findings should be submitted to Council if they have not already been submitted.
30.	Plan 9065/DA209 shows sections with very large cut and fill occurring. Details of the batter treatments for Site Section 3 are to be provided.	As Council has been advised, Clouston has been engaged by Landcom as the landscape architect on this project. These details will be resolved by landscape design.	Can be conditioned.

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31.	Plan 9065/DA210 the outlets from the raingardens are discharging at the top of bank. These should be extended to the invert of the creek and protection provided to minimise scour.	Details will be provided with Construction Certificate Documentation	Can be conditioned.
32.	Plan 9065/DA211 existing light poles are only to be reused if the new light poles are identical and the light fixtures meet Council's current standards.	The lighting poles will all be new along Goldsmith Ave.	Noted. Can be conditioned.
33.	Technical Services understands that work is currently being undertaken to further consider the traffic impacts of the development and the works which may be required in association with development of the site. The comments below are offered in relation to the plans as submitted and do not take into account any variations which may arise as a result of the current investigations.	Noted	See comments JRPP report.
34.	Plan 9065/DA301 shows the realigned intersection of Goldsmith Avenue and Gilchrist Drive. (Understand that provision has now been made for left turn slip lane/s).	Correct	No action

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35.	Plan 9065/DA302 Section 3 and 4 indicate landscaping of the median. Any landscaping in this area is to be low profile so as not to impact sight distances, drought tolerant and no/low maintenance.	As Council has been advised, Clouston has been engaged by Landcom as the landscape architect on this project. These details will be resolved by landscape design.	Can be conditioned.
36.	Plan 9065/DA303 shows a significant length of Goldsmith Avenue now draining to Gilchrist Drive, where these flows would have previously not flowed in this direction. Plan 9065/DA306 shows this drainage and that across Gilchrist Avenue being directed to Gilchrist Oval. In addition there appears to be a significant upstream catchment on the hillside towards the TAFE which may also be captured in this system. Analysis of the existing drainage system in this vicinity and all the proposed changes are to be presented to Council prior to agreeing to this change in flow direction. Additionally, no details are provided for how this drainage will be managed across Gilchrist Oval. This is potentially quite a long section of piping which would need to be provided by the developer subject to Council approval.	Drainage layout has already been amended to ameliorate this concern, Details will be provided with the Construction Certificate documentation.	Can be conditioned, however, Council would like to see how drainage is proposed to be managed as all solutions would appear to require Council land to convey flows.

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37.	Drawing No. 77588.02.P03 Rev C shows a Lot 1098 with an area of 7542m². Who will own this area? Should not be Council as it is not part of the road.	Landcom would like to discuss the opportunity of transferring the land to Council at no cost after landscape treatment.	May need comments from John Milicic. If Council agrees to take this land, S94 credits should not apply and any development should render the area a nil to minimal maintenance zone due to reduced access.
38.	General comments – alternatives to bio retentions systems and rain gardens will be considered by Council. Whole of life costs should be considered when evaluating alternatives.	The rain gardens are proposed for approval as part of the stage 1 DA. This policy change will be considered as part of the future development applications.	There is no policy change indicated from Council's earlier comments. However, it is recommended that alternatives are considered which may be mutually beneficial to Council and the developer in terms of cost effectiveness and maintenance.
Flooding, Stormwater Detention & Dam Hazard Report Worley Parsons 06/03/2012			

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39.	Council previously agreed that modelling need only be extended to Gilchrist Basin to demonstrate that the development was maintaining the status quo with respect to flooding. To achieve this the applicant had to demonstrate that the peak flows were maintained or lowered and the timing to the peak was not varied from existing. While the report discusses the quantum of the peak flow the timing of the peak has not been discussed.	To be reviewed when Council's model is available.	Consultants have now been provided with the RAFTS model for review. Need to provide advice as requested.
40.	It is noted that these proposals decrease the storage in the University Basins from that which is provided currently. Technical Services is concerned that this storage once lost will be impossible to get back. We need to make sure that council agrees with the philosophy provided by the applicant. Recommend that you organise a meeting between Council officers, Landcom and their consultants. They will need to identify the advantages of their proposal over the status quo situation and satisfy Council that the modifications to the basins are warranted.	To be reviewed when Council's model is available.	Consultants have now been provided with the RAFTS model for review. Need to provide advice as requested.

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41.	The report focuses on the 100 year ARI and PMF events. A full range of storm events needs to be modelled to determine the impacts in more frequent storm events.	To be reviewed when Council's model is available.	Consultants have now been provided with the RAFTS model for review. Need to provide advice as requested.
42.	Basin 4 will flood the UWS access road. This appears to have been addressed in the Masterplan where a new higher level road has been provided to give access to the residential development. Is UWS aware of / accepting of the increased flood affectation on this road?	To be reviewed when Council's model is available.	Consultants have now been provided with the RAFTS model for review. Need to provide advice as requested.
43.	Dam Break analysis has been carried out for Basins 1, 2, and 3. It also needs to be carried out for Basin 4.	Noted	Needs to be submitted for review.
44.	Dam Break analysis needs to be routed through Macarthur Gardens to ensure that development is not adversely impacted.	Noted	Needs to be submitted for review.
45.	The stage discharge relationship shown on page 14 has been obtained from Council's XP-Rafts model.	Noted	No response – Note only

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46.	It is noted that the spillways are not all being designed to safely convey the ½ PMF. This is due in some instances to the lack of available land and cannot be avoided.	Noted	No response – note only.
47.	Creek cross sections modelled in HEC-RAS do not appear to have included consideration of raingardens where these encroach into the waterway area.	J.Wyndham Prince has rerun HECRAS sections based on raingardens and other works proposed in the riparian zone. Resultant flood extents are shown on plan sheets 9065/DA104 & 9065/DA105.	The sections in the revised plans are identical to previous versions. These need to be revised before the issue of construction certificate. Can be conditioned.
48.	Section 5.1.2 discusses the works in Basin 2 which include proposals to remove the existing concrete dish drain and low flow pipe and replace these with a riparian corridor. Council would oppose this, as the existing channel is paid for, stable and low/no maintenance. This area has been identified as being saline and would present particular challenges to achieve a natural creekline if it could be achieved with all the upstream development now in place. Council recommends leaving the existing infrastructure and retrofitting to achieve a softer look and to divert some of the flows to a new riparian corridor adjoining the channel.	Landcom proposes to realign and naturalise the riparian corridor in line with Council's masterplan approval in 2008. This is subject to a future DA and separate discussions regarding the VPA whereby Landcom and UWS are proposing to dedicate the sports fields to Council.	This treatment is not indicated in the Masterplan 2008. Technical Services maintains our original comments on this. Council will enter any discussions necessary with the NSW Office of Water to secure a rational treatment for this system which will not require removal of the existing infrastructure. The area can be retrofitted to achieve a softer look and to divert some of the flows to a new riparian corridor adjoining the channel for water quality treatment.

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49.	The report indicates (Section 6.7) channel dimensions required to convey dambreak flows past/through Macarthur Gardens. Who is responsible for the cost of these works? Would assume that this would be Macarthur Gardens, but are the new requirements consistent with the Macarthur Gardens Masterplan or are there any changes which will be required?	Landcom and Stockland will be responsible for these works. Any proposed works at Macarthur Gardens North will be subject to further discussions with Council and separate DA's.	Noted.
50.	The Geotechnical Report provided at Appendix 7 (page 4) indicates, with respect to Harrison's Dam that "the upstream batter is densely vegetated with numerous trees". If these trees are located in fill batters, the trees will need to be removed and the embankment may require corrective works to reinstate. This should be identified when a full geotechnical investigation of the basin is undertaken.	Noted - This is subject to a future DA and outside of the works proposed as part of the Stage 1 DA.	Noted. Can be conditioned with future development.
Goldsmith Avenue Intersection Letter			
51.	Letter provides motherhood statements and relies on the technical assessment in AECOM's report. Comments on this report are addressed separately.	Noted. Intersection concept design report is currently being prepared.	Noted see additional comments in separate memo addressing traffic report and intersection design.

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University of Western Sydney Lands Landscape Design Statement			
52.	Plans use some symbols for which the species has not been nominated.	As Council has been advised, Clouston has been engaged by Landcom as the landscape architect on this project. These details will be resolved by landscape design.	Can be conditioned.
53.	Concerned with the relatively extensive use of deciduous trees which will require access for street sweepers to collect leaf fall to prevent blockage of drainage systems.	As Council has been advised, Clouston has been engaged by Landcom as the landscape architect on this project. These details will be resolved by landscape design.	Can be conditioned.
54.	The planting density in Goldsmith Avenue appears very high and the final layout must not impact on street lighting in this area.	As Council has been advised, Clouston has been engaged by Landcom as the landscape architect on this project. These details will be resolved by landscape design.	Can be conditioned.
55.	Drawing L08 indicates that an area of 6m centring on the tree pit is to be ripped to a depth of at least 100mm below the rootball dimension. No ripping is to occur that may destabilise the road formation.	Noted	Can be conditioned.
56.	Root barrier controls are to be confirmed with Mike Hurcum and Rick Weeding of Council's Operational Services section. Proposal for 600 deep root barrier may not be sufficient.	Noted	Can be conditioned.

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57.	Timber edges around the tree pits are not to be provided on any roads that will be maintained by Council.	Noted	Can be conditioned.
Master Plan Report			
58.	The public transport plan shows potential bus route and stop locations which appear to be foreshortened with respect to the release area. It appears that a slightly longer route without doubling back may be feasible. This should be considered early with respect to the adopted road hierarchy and design configuration.	Landcom is working with Transport NSW and Busways to confirm the preferred bus route. The area in question is subject to a future DA and outside the scope of the Stage 1 DA.	Noted.
59.	It is noted that the slope analysis plan shows some lots for which the slope is not nominated.	Noted. This report is draft and only provided for Council's information.	Noted.
60.	Council acknowledges that significant work has been undertaken to address previous concerns regarding the development of land on a steeply sloping site. There are, however, several concerns regarding the proposed retaining walls:		

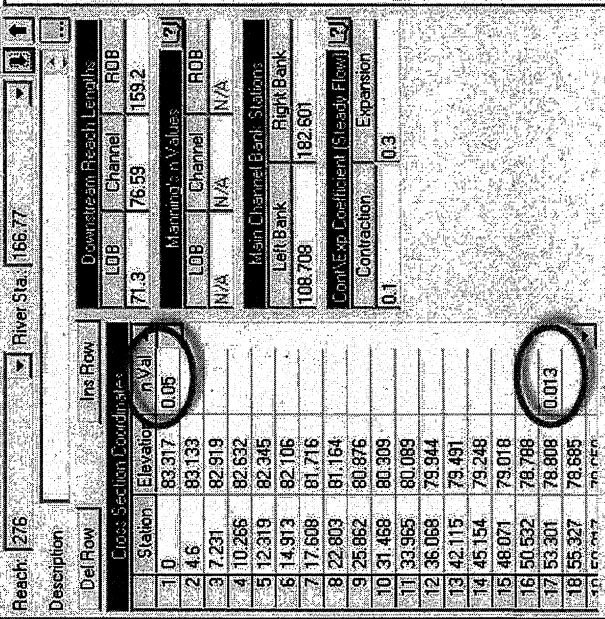
ID	Council's Original Comments	JWP Comments	Council's Response
a.	The retaining walls are proposed to be located on the downslope property, while providing support for the upslope property. This will require easements for maintenance on every downslope property and may lead to future neighbour disputes if work on the retaining wall is required.	Generally retaining walls will be located on high side lot with wall located in that lot. Footing and fencing will all contained within that lot.	Can be conditioned.
b.	The fences will be located on top of the retaining wall which is not proposed to be on the boundary between lots. How will this work?	Fencing is not part of the DA1 package of works - see comments above for 60a.	Can be conditioned.
c.	Retaining walls are to have a design life of 100 years and as such materials used must be certified for this life. Provision for drainage behind the wall and appropriate flushing points are also to be designed.	Noted. Details will be provided with the Construction Certificate documentation.	Can be conditioned.
61.	It may be necessary to consider the impact of the retaining walls and boundary fences with respect to sunlight and shading.	The height of side retaining walls have been limited to 1m or less with this impact/relationship in mind.	Can be conditioned.
Safety Management Study Eastern Gas Pipeline			

ID	Council's Original Comments	JWP Comments	Council's Response
62.	Council's Development Engineers will need to be familiar with the requirements in this document to ensure that development complies with the requirements therein. This will be particularly critical for any works on creek crossings and the acoustic wall footings.	Noted. Jemena fully understand the nature of all works that will occur within the easement. Landcom and Jemena are currently in the process of negotiating a licence agreement for these works.	Noted.
Salinity Investigation and Management Plan			
Douglas Partners			
63.	The findings of this report should be confirmed as having informed the drainage design and plant species selection.	Noted	Can be conditioned.
64.	The requirements set out in the Salinity Management Plan in Section 10 should be imposed as a condition of consent for the development.	Council can, if it wishes, confirm this requirement by attaching an appropriate condition to any consent granted.	Can be conditioned.
65.	With respect to structures the report makes recommendations. Consideration should also be given to the requirements set out in Council's Sustainable City DCP Volume 2 and the Building Code of Australia. Whichever of these sets the highest standard is that which should be adopted.	Noted	Can be conditioned.

ID	Council's Original Comments	JWP Comments	Council's Response
66.	It is noted that none of the bores were located in the creek lines which are likely to be the areas most impacted by salinity. Additional bores should be required in the creek lines to ensure appropriate material and plant species are selected for any works in these locations.	Other than a culvert crossing which is part of a later stage of development there are no substantive works proposed in the creek line areas.	Noted.
Slope Stability Assessment Douglas Partners March 2012			
67.	Reviewed – no comments.		
Stormwater Management Strategy Report J Wyndham Prince March 2012			
68.	Council acknowledges that rainwater tanks are required to meet the objectives of BASIX however tanks are not to be considered as part of the water quality treatment system.	Under the Draft MUSIC Modelling Guidelines (BMT WBM, August 2010), it is considered standard engineering practice to include rainwater tanks as part of the treatment train. Note that the rainwater tank node does not contribute to the treatment of pollutants; however, they do provide an important benefit in satisfying the Stream Erosion Index requirements. Hence, they are regarded as an important element of the treatment train and will not be excluded from modelling.	Noted

ID	Council's Original Comments	JWP Comments	Council's Response
69.	Section 4.1.3 discusses the benefits of the strategy. It is noted that works in Basin 2 which include proposals to remove the existing concrete dish drain and low flow pipe and replace these with a riparian corridor. Council would oppose this, as the existing channel is paid for, stable and low/no maintenance. This area has been identified as being saline and would present particular challenges to achieve a natural creekline if it could be achieved with all the upstream development now in place. Council recommends leaving the existing infrastructure and retrofitting to achieve a softer look and to divert some of the flows to a new riparian corridor adjoining the channel.	Refer to Comment on Item No. 48	This treatment is not indicated in the Masterplan 2008. Technical Services maintains our original comments on this. Council will enter any discussions necessary with the NSW Office of Water to secure a rational treatment for this system which will not require removal of the existing infrastructure. The area can be retrofitted to achieve a softer look and to divert some of the flows to a new riparian corridor adjoining the channel for water quality treatment.
70.	The report indicates that the latest version of HECRAS has been used. This is not the case. The latest version is 4.1. The latest version of all software must be used.	The HEC-RAS modelling has been undertaken within version 4.1. The reference in the text is a typographical error.	Noted
71.	The normal depths used in HECRAS would appear to be very low 65mm and 15.6mm. use of these values is to be justified.	When assigned as a boundary condition in HEC-RAS, note that "normal depth" refers to the slope of the channel and not a depth. In accordance with the HEC-RAS user manual, the slope has been approximated based on detailed survey information and is defined as 6.5% and 1.56% (not 65mm and 15.6mm).	Noted

ID	Council's Original Comments	JWP Comments	Council's Response
72.	It is noted that the report indicates that the properties adjoining the riparian corridor are well above the 100 year ARI flood levels (page 20) which indicates that the fill has been placed in these areas to balance cut and fill rather than to provide flood free lots. Consideration needs to be given to minimising some of the fill in this area to prevent the riparian corridor from becoming a vertical sided tunnel which lends itself to antisocial behaviour. i.e. there should be a balance between the social and the earthworks objectives of the site.	Properties adjoining riparian edge have been elevated to achieve an optimal outcome in terms of lot grading for those lots and the adjoining upslope lots. These lots would become undesirably steep without elevation of the lots at the riparian edge. These lots will overlook the riparian corridor and provide passive surveillance from a safety perspective. It is not agreed that the retaining walls will create a "vertical sided tunnel" as the height and location of basins reduce this providing good opportunities for casual surveillance. These are being further explored as part of the landscape concepts for the corridor.	Noted. Consideration should be given to conditioning the development to show the shadow diagrams within the environmental corridor to ensure future viability of the vegetation.
73.	The figures presented in Table 7.3 indicate that the rainfall used in the MUSIC modelling may not be representative for the site and a closer site should be considered.	The rainfall data used in modelling (Liverpool - Whitlam Centre) is from 10 years of continual data that is regarded as a best representation of the local area. This dataset has been utilised in several recent projects that have been approved through Campbelltown Council and is situated only 20 km from the subject site. <u>Equivalent</u> data from an alternate location can be substituted but is likely to have little impact on the modelling.	Noted.
74.	Works proposed on Figure 2 need to be considered with respect to requirements for working in proximity to the gas easement.	The area in question is outside of the site boundary and is in RMS road reserve lands. CC plans will not show any works outside of the site boundary. See previous comment on Items No.8 and No.18 which raise the same issue.	Note
75.	Comments on the HECRAS and MUSIC Modelling:		

ID	Council's Original Comments	JWP Comments	Council's Response
a.	HECRAS - The Manning's roughness value at river ST 166.77 and 212.69 (embankment) has N/A (or null) against it. This may impact the results significantly at these sections and downstream.	Manning's values have been assigned at both of these sections. These have been assigned using "horizontal variations in 'n' values" which allows for more definition of the Manning's values across a section. In this instance, the corridor is no longer clearly defined by a top of bank and instead transitions to the grassed areas in Basin 2. The Manning's value adopted can be seen in the below snapshot:  The screenshot displays the HECRAS software interface. The 'Inlet Flow' tab is active, showing a table of Manning's n values for different stations. The value 0.05 is circled in the 'Inlet Flow' column for station 1.0. The 'Downstream Reach Lengths' table shows values for LOB, Channel, and ROB. The 'Main Channel Bank Stations' table shows values for Left Bank and Right Bank. The 'Contraction/Expansion' table shows values for Contraction and Expansion.	Noted
b.	HECRAS - The Manning's value in general for whole model has been set to 0.07 in the middle and 0.1 over the banks. The n=0.1 value is significantly higher than the anticipated values based on the plans submitted.	Overbanks in the riparian corridor will be revegetated and regenerated as Cumberland Plain Woodland (where required). Manning's n of 0.1 is considered appropriate. The sections will be amended to indicate this planting requirement however full details are to be on the landscaped plans.	An appropriate and realistic range of Manning's value (from first planting to fully established form) should be modelled as such in a sensitivity analysis as varying range of vegetation roughness is likely to occur at different times in the development. Can be conditioned.

ID	Council's Original Comments	JWP Comments	Council's Response
a.	MUSIC - The model for the existing conditions has generic treatment nodes not linked with the model. These can sit individually as a template and may not impact the outputs but increases the clutter in the model. Recommend that these should be removed if not being used.	Generic nodes that are included in the model are used in the determination of the Stream Erosion Index (SEI). This assessment has been undertaken as required in the Draft MUSIC Modelling Guidelines (BMT WBM, August 2010) and is discussed in Section 8 of the report. These nodes are included in the model so that they can easily be connected (or disconnected) from the network depending on whether assessment is undertaken on SEI or standard pollutant treatments. By connecting to the network, assessment of the SEI can be undertaken.	Noted
b.	MUSIC - In one of the models i-e 9065MU_01_V2 sized to SEI 120227, the generic nodes are strategically placed at the end of some treatment terrains which reduce the outflow significantly. This will, subsequently impact the results by showing a non realistic improvement.	As discussed above, assessment has been undertaken under the Draft MUSIC Modelling Guidelines (BMT WBM, August 2010) and is discussed in Section 8 of the report. - The model marked "Sized to SEI" includes the generic nodes. These are positioned at key locations in order to assess the Stream Erosion Index across the whole development (i.e compared against the existing model and the exceeding of the stream forming flows) - The model marked "Sized to 85 65 45" does not include the generic nodes. The purpose of this model is to show the performance of the treatment train against the required pollutant removals. The two models are provided to enable the reviewer to undertake assessment without having the 'outflow significantly reduced.	Noted
c.	MUSIC - The rainwater tanks in the model should be considered full conservatively i-e no water quality benefits to be considered for these.	It is not regarded as standard practice to exclude from modelling. Refer to Section 8.1.1 of the Draft MUSIC Modelling Guidelines (BMT WBM, August 2010) where rainwater tanks are included as a primary treatment measure.	As part of the consent conditions, JWP should be able to demonstrate in their report how rainwater usage has been factored into their model.
	Traffic and Rail Noise Assessment		
76	Not reviewed	Noted	

ID	Council's Original Comments	JWP Comments	Council's Response
	Traffic and Transport Assessment		
77 .	Not reviewed due to ongoing discussion on this matter.	Noted	

If you require any additional information please contact Cathy Kinsey on ext. 4635.

Kevin Lynch
Manager Technical Services

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