

Author name: M. Hanna

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Your submission for this review:

Vantage Property specialises in the unlocking of fragmented release areas and delivering new land lots for housing in Sydneys southwest. We take pride in our long-standing tenure in the Austral and Leppington North Precincts having delivered the first housing project since rezoning in 2013 and have gone on to complete 645 lots in Austral-Leppington North alone with a further 345 lots under construction and assessment. We have delivered just under 20% of all of the houses in this precinct to date. We continue to broker the consolidation of small land holdings, that is often challenging and sensitive to increases to construction and delivery costs. Please find attached our submission for your consideration. Mina Hanna Development Director

5 June 2023

Andrew Nicholls PSM
Chief Executive Officer
IPART
33 Moore Street
Liverpool, NSW 2170

By online submission

Dear Andrew,

Re: Submission on IPART's Draft Assessment of Austral Leppington North Contributions Plan for Liverpool City Council

As an active developer within the Austral and Leppington North Precincts, Vantage Properties welcome the opportunity to review and provide a submission on IPART's draft assessment of Liverpool City Council's (**Council**) *Contributions Plan 2021 – Austral and Leppington North (Contributions Plan 2021)*. Whilst Council's Contributions Plan 2021 has been long in the making and will provide for ongoing certainty for the funding of local infrastructure, it is our view that if it proceeds in its current form, and in line with IPART's recommendations, there will be significant impacts to the continued supply of new housing in these Precincts. This submission details these concerns for IPART's consideration.

1. Background

Vantage Property specialises in the unlocking of fragmented release areas and delivering new land lots for housing in Sydney's southwest. We take pride in our long-standing tenure in the Austral and Leppington North Precincts having delivered the first housing project since rezoning in 2013 and have gone on to complete 645 lots in Austral-Leppington North alone with a further 345 lots under construction and assessment. We have delivered just under 20% of all of the houses in this precinct to date. We continue to broker the consolidation of small land holdings, that is often challenging and sensitive to increases to construction and delivery costs.

As IPART would be aware, Council is currently levying local contributions under *Contributions Plan 2014 – Austral and Leppington North (Contributions Plan 2014)* and intend to do so until the new Contributions Plan 2021 can be finalised. A key difference between the two plans is the change in approach to stormwater management. The new approach represents a shift from the regional approach to stormwater treatment within larger basins to a road raingarden regime in a piecemeal fashion that fails to consider the inability for some of these treatment areas to be delivered given completed and approved developments.

At the time the Contributions Plan was exhibited, key stormwater management documentation was not provided by Council for the public to review and understand how the revised approach would

result in both better stormwater management outcomes and reduced infrastructure costs as suggested by Council. It has been our experience that whilst we have been able to actively demonstrate to Council that a more regional approach to stormwater treatment can achieve both reduced infrastructure delivery and maintenance costs, Council has been unwavering in the delivery of the revised stormwater management regime provided for in the new Contributions Plan.

The following sections outlines the key issues we have identified within the Contributions Plan 2021 and the implications of some of IPART's recommendations for development and infrastructure delivery in the Austral and Leppington North Precincts:

2. Revised stormwater management approach costs more to deliver

It is appreciated that Council commenced the preparation of a revised approach to the stormwater management strategy for the Austral and Leppington North Precincts from the original Contributions Plan 2014 with a goal to improve water quality treatment outcomes, rationalise infrastructure costs and respond to various topographical and sizing challenges in the Precincts. It is our view that the revised strategy does not achieve either significant improvement in stormwater quality nor a reduction in costs for the delivery of infrastructure and increases the overall maintenance burden placed on Council. Refer to specific Civil Design advice provided at **Attachment A**.

Setting aside the unspecified shortfalls in land and bioretention areas raised in Council's revised strategy, the additional costs the revised strategy place on the Contributions Plan 2021 can readily be seen from a comparison of the plans as follows:

Drainage Infrastructure Component	Contributions Plan 2014		Contributions Plan 2021	
	Land to be acquired	Indexed Value of Works (Dec 2020 PPI ¹)	Land to be acquired	Value of Works (Dec 2020 PPI)
Total for Drainage Infrastructure	66.8293ha	\$184,748,924	72.6049ha	\$290,496,427

The revised stormwater management regime to be implemented under Contributions Plan 2021 requires the acquisition of an additional 5.78ha of land (setting aside the significant additional acquisition costs) as well an increase in the value of works from by \$105M from Contributions Plan 2014 (when indexed to the same point in December 2020). It is hard to fathom how such a change in strategy can result in a fair and reasonable cost and is unclear as to whether Council undertook a cost benefit analysis to justify the departure from the original stormwater management strategy.

¹ The total value of drainage works in Contributions Plan 2014 was \$159,738,846 and indexed to Primary Producer Index - Road and Bridge Construction NSW (Category 3101) with base at June 2014 (102.2) to December 2020 (119.7) to compare like for like costs for the drainage infrastructure to be funded by each of the contributions Plans. Note If Indexed to CPI, this same infrastructure In Contributions Plan 2014, as previously provided for, would have a greater contribution allowance of \$197,471,180.

Given the additional \$105M in stormwater drainage works costs, equivalent to \$6,500 per new dwelling², surely it would have been more capital efficient to refine the existing strategy. In addition to reducing Council's overall exposure to construction costs over the life of the Contributions Plan 2021, refinement of the previous stormwater management strategy would have also added the benefit of reducing the overall per lot contribution rate.

Without a proper cost benefit analysis between both of the stormwater management regimes, it cannot be justified that the drainage costs are fair and reasonable.

Recommendation 2.1: The cost differential between the stormwater management strategies adopted as part of Contributions Plan 2014 and Contributions Plan 2021 is considerable. IPART should interrogate the original stormwater management regime and associate infrastructure costs to determine whether the drainage works costs are fair or reasonable and if it would otherwise be more cost effective to have refined the Contributions Plan 2014 regime to be fit for purpose. The findings of this assessment available for public comment before IPART finalises their assessment and adoption of the Contributions Plan

² Based on 16,199 net dwellings in the Austral and Leppington North precincts per the Contributions Plan.

Several major constraints and risks that were identified during the concept design process are summarised below:

- **Limited footprint area** – At most locations insufficient footprint area was allocated in the ILP for the proposed drainage infrastructure. As a result, several trunk drainage channels needed to be replaced with pipes. Moreover, most of the detention basins required water depths greater than 1.2 m. Therefore, additional safety measures will need to be implemented around these basins. Furthermore, due to the spatial constraints the design of several detention basins deviated from the preferred criteria and resulted in embankments with staggered sandstone stepped wall at the base. Also, all the co-located biofilters (except one) were undersized, which necessitated the need for supplementary streetscape controls (i.e. raingardens).
- **Flat terrain** – Due to the flat nature of the project area it was necessary to adopt relatively flat slopes for trunk pipes, channels and culverts at several locations. Furthermore, it was very challenging to meet the minimum cover requirements for trunk drainage infrastructure due to the very flat terrain. Additionally, the flat terrain was identified as one of the major constraints when designing the proposed biofilters. There was insufficient hydraulic grade available to drain a biofilter in most of the project locations.
- **Finished design surface** – The finished design surface level was not available during the concept design stage. Therefore, the entire concept design assumed that the finished surface levels will be the same as the existing surface levels. There is an inherent risk that the finished surface levels may be different to the existing levels. Therefore, the concept design levels and parameters (as shown on the detailed concept design drawings) may change depending on the final design surface.
- **Non-certified land** – Much of the proposed drainage infrastructure is located within non-certified land, which will require off-sets to enable construction. This constraint was addressed separately in the in REF.
- **Conflicts with other utility infrastructure** – There are several utility infrastructure within the project area. However, the depth and size of most of the utilities were unavailable during the concept design. Therefore, the assessment of potential conflicts between the proposed drainage infrastructure and other utilities could only be carried out using plan views. However, SMEC liaised with owners of critical utilities such as high voltage transmission lines (TransGrid and Endeavour Energy) and high-pressure gas mains (Jemena). Several design modifications

were carried out to comply with these utility providers. However, a detailed assessment of all utility conflicts is needed during detailed design.

- **Contaminated soil** – Based on the findings from the Phase 1 Contamination Assessment, it is envisaged that excess excavation material would need to be transported off-site to an approved landfill and disposed of as low level contaminated material. This resulted in the earthwork disposal cost being a significant item of contingency risk. A more detailed Phase 2 assessment may allow the material to be reclassified and/or the disposal volumes to be reduced.
- **Soft soil conditions** – It was determined in the geotechnical investigation that several basin sites demonstrate soft soil conditions. In these locations, “soft” to “firm” natural soils are to be removed and replaced with controlled fill.

3. Nexus for additional traffic and transport infrastructure

As part of the exhibition of the Contributions Plan 2021, a number of developers made submissions to Council seeking clarification of the demand for additional intersection upgrades that were identified beyond those identified in the *Post Exhibition Transport Report* prepared by AECOM in 2012 that supported the rezoning of the precincts. The justification and demand for these intersections has been left wanting with IPART's report suggesting it is appropriate to rely on Council's experience and local knowledge alone to create an appropriate nexus without any validation. This approach is not considered satisfactory given the rigour Council applies in the development assessment process on traffic management issues and will leave Council open to legal challenge on the contributions, now that they are uncapped, regarding the nexus for these additional intersections and the reasonableness of any contribution that would be imposed.

Whilst Vantage Property do not object to the inclusion of additional traffic management infrastructure, Council should be required to properly justify the demand for this infrastructure to ensure exposure to future appeals is minimised.

***Recommendation 3.1:** Council be required to undertake appropriate traffic modelling and assessment to determine the need for the intersection treatments and make the findings of this assessment available for public comment before IPART finalises their assessment and adoption of the Contributions Plan.*

4. Open Space allocation query

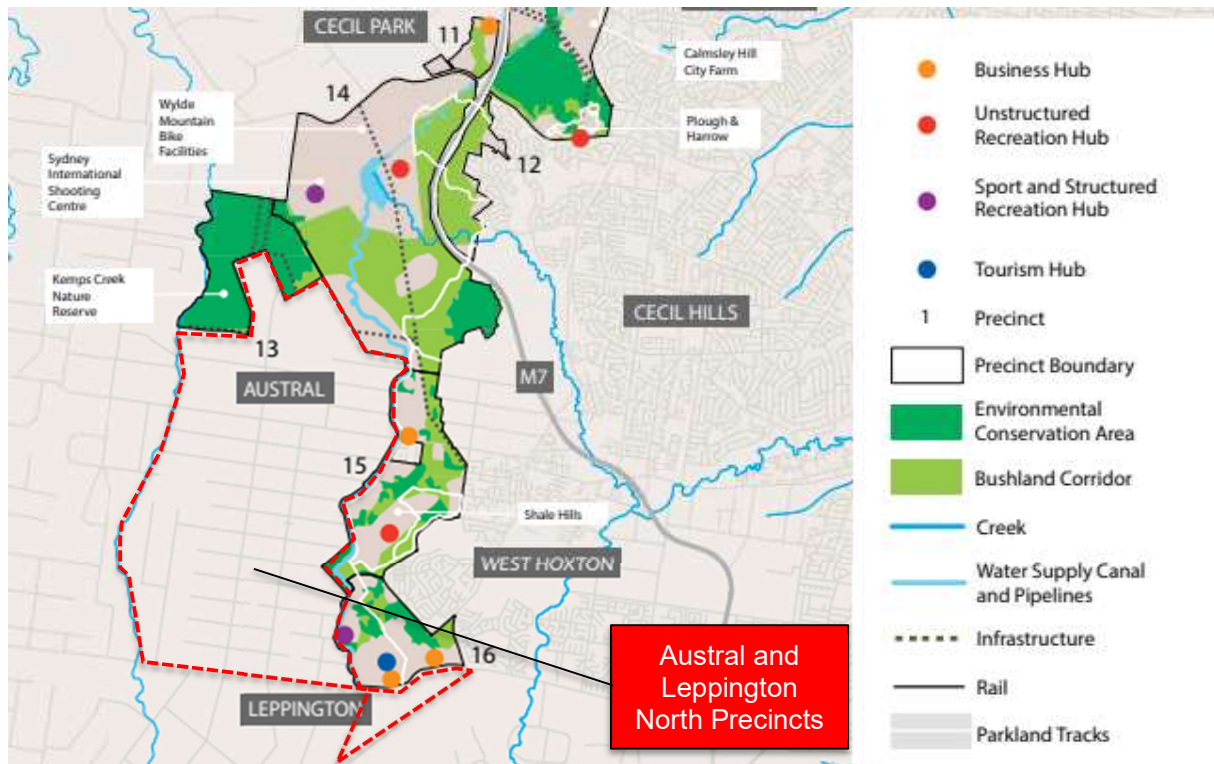
From review of Table 4.7 in IPART's review, it implies that there is a provision of 1.94ha of open space per 1,000 people versus the allocation of 2.08ha/1,000 people stated in Contributions Plan 2021. It is not clear as to whether the 1.94ha is an accurate reflection of the allocation of open space. For instance, Council already owns 13.5ha of open space land that, per the Contributions Plan 2021, served some 2,659 people (associated residents of the existing 782 dwellings in the precincts). This would equate to a rate of provision of 5ha/1,000 people, well over Council's minimum standard with a surplus of 2.247ha of open space per 1,000 people available or additional 5.975ha of additional open space that would go towards catering for the incoming additional population in Austral and Leppington North.

However, IPART's calculation of 1.94ha does not seem to recognise the existing rate of provision and associated apportionment over the whole of the Precincts. For instance a rate of provision 1.94ha based on 55,078 people identified in the plan equates to 106.6ha, it fails to recognise the surplus open space already available in Austral and Leppington North (some 5.975ha).

As this figure will presumably be utilised by Council to inform future open space planning and potential changes to the Contributions Plan 2021, this figure should be clarified and confirmed. Further, it should be noted, as referenced in IPART's report, that Council was part of the Precinct Planning process for the Austral and Leppington North Precincts led by the Department of Planning and Environment that had agreed to the lower rate of provision of open space presumably due to the proximity to the Western Sydney Parklands future open space projects identified in their masterplan provided in their Plan of Management that identifies 2 Sport and Structured Recreation

Hubs and Unstructured Recreation Hub within the immediate vicinity of the Austral and Leppington North Precincts.

Recommendation 4.1: As part of finalising their report on the Contributions Plan, IPART should clarify the calculations in Table 4.7 relating to the planned open space in the Austral and Leppington North Precincts, in particular the rate of provision, that will be used to inform future open space planning by Council.



Source. Western Sydney Parklands, 2023

Figure 1. Planned open space and recreation reserves in the Western Sydney Parklands

5. Future review of costs

It is noted that IPART has included general commentary that Contributions Plan 2021 is based on costing methodology that provides a reasonable estimate of costs. It also notes that independent costs for infrastructure may be above the indexed values of works in some instances and makes the recommendation for costs to be re-examined within three years.

As IPART would be aware, Council’s application for the Contributions Plan 2021 review to IPART (page 27) notes that with the exception of the stormwater management costs (that have been re-costed due to a change in approach) that the common rates prepared by the Department of Planning and Environment, and further refined by WT Partnerships, prepared for both Camden and Liverpool City Council have been relied on.

The planning for the Austral and Leppington North Precincts was undertaken by the NSW Government (then DP&I, now Department of Planning, Industry and Environment (DPIE)) in conjunction with Liverpool City and Camden councils. The contributions plans for each council were based on the same principles and planning studies, noting refinements have been required as planning for the precincts has progressed.

Council was part of a joint infrastructure cost working group that established the original infrastructure cost estimates in the plan, based on input costing studies and Council's experience. Costs for capital works were compared to similar section 7.11 plans and the rates were adjusted where appropriate.

Both councils originally sought to have as much consistency between their respective contributions plans as possible. This is reflected in the same or similar unit costs for much of the comparable infrastructure.

The Department also engaged quantity surveyors, WT Partnership to further review the draft costing rates and the results were considered by Council in finalising the original plan's cost estimates, particularly for open space embellishment.

In amending the Plan, Council engaged SMEC to cost its recommended stormwater infrastructure facilities, and these costs have been adopted by Council with some amendment for more reasonable contingency, project design and on-costs (streetscape raingarden costs), and cut and fill allowances, as considered necessary by Council.

It is unclear then how in IPART's review of the Camden Growth Area Contributions Plan deemed the costs for open space and roads, with appropriate indexation, to be reasonable in the review of Camden's plan yet now needing additional review in Liverpool's review. This recommendation for review of costs within 3 years will place a significant burden on Council that has already been significantly hampered in progressing the Contributions Plan 2021. It further creates a significant degree of concern and uncertainty for the ongoing investment in the Austral and Leppington Precincts and if the differential is of that great a concern, Council should revise these costs now and update the schedule for public review, to determine whether they are a reasonable representation of cost.

Recommendation 5.1: *Council be required to undertake the suggested re-costing of infrastructure now and make the findings of this assessment and revised infrastructure schedule available for public comment before IPART finalises their assessment and adoption of the Contributions Plan. Alternatively, IPART should remove the recommendation that places an undue burden on Council to re-cost infrastructure within three years and maintain the standard approach to indexation of costs, as previously deemed appropriate for other adjoining contributions plans in Camden.*

6. Phasing in of new contributions rates

The development industry has long raised the concern with Council of the potential impacts to active and future projects viability in Austral and Leppington North through the imposition of an increased contributions. Whilst we appreciate the need for the cap on contributions to be removed, there has been continued uncertainty in these Precincts as to the timing of any new contribution, noting that the revised Contribution Plan 2021 was first put to Council back in 2019 and is only now moving closer to application.

As outlined below, for a typical development in Austral at 20 dwellings per hectare, the indexed rate in the Contributions Plan 2021 would represent a contribution increase of \$38,520 per lot. If implemented cold, this has the potential to significantly impact developments that are currently under assessment if not determined before the adoption of the new plan and also serves to impact on the ability for the market to acquire new land in Austral and Leppington North precincts as there has been no change in project value that can offset the additional contribution. If anything, land values have stagnated with construction costs and finance costs having tightened and increased. In addition, Council continues to grapple with a significant strain on planning resources that is seeing approvals in the Austral and Leppington North Precincts from 2020 still being undetermined.

In this regard, similar to how the cap on contributions has been removed from other western Sydney release areas over a number of years per the Planning Minister's Direction, it is vital that they are phased in a progressive manner. Even Sydney Water's most recent introduction of Development Servicing Plan charges (that are not as great as the local contribution increase in Austral and Leppington North) are being phased in over a 2 year period. In this regard, direction for Council is required to phase the implementation of the increased contribution rates.

Recommendation 6.1: IPART should direct Council to amend the Contributions Plan to include appropriate savings and transitional arrangements to ensure development applications that have been lodged but not yet determined are not unduly burdened by the increase in contributions.

Recommendation 6.2: IPART and the Planning Minister should provide a specific direction for the Austral and Leppington North Precincts to have a phased implementation of the revised rates over three years, as was afforded to other Growth Area Precincts to not unduly constrain the continued supply of housing in Austral and Leppington North.

7. Cumulative impact of infrastructure reform

Whilst not the specific remit of IPART, there appears to be no holistic consideration by Government as to the effects of implementing new infrastructure reform on housing supply in Sydney's Growth Areas. Based on significant investment by utility providers and developers, the Austral and Leppington North Precincts have been able to establish a delivery pipeline that now makes a significant contribution to housing supply in Sydney's South West with almost 700 lots/housing per year (see below).

Figure 8 - Dwelling growth over time in each Precinct

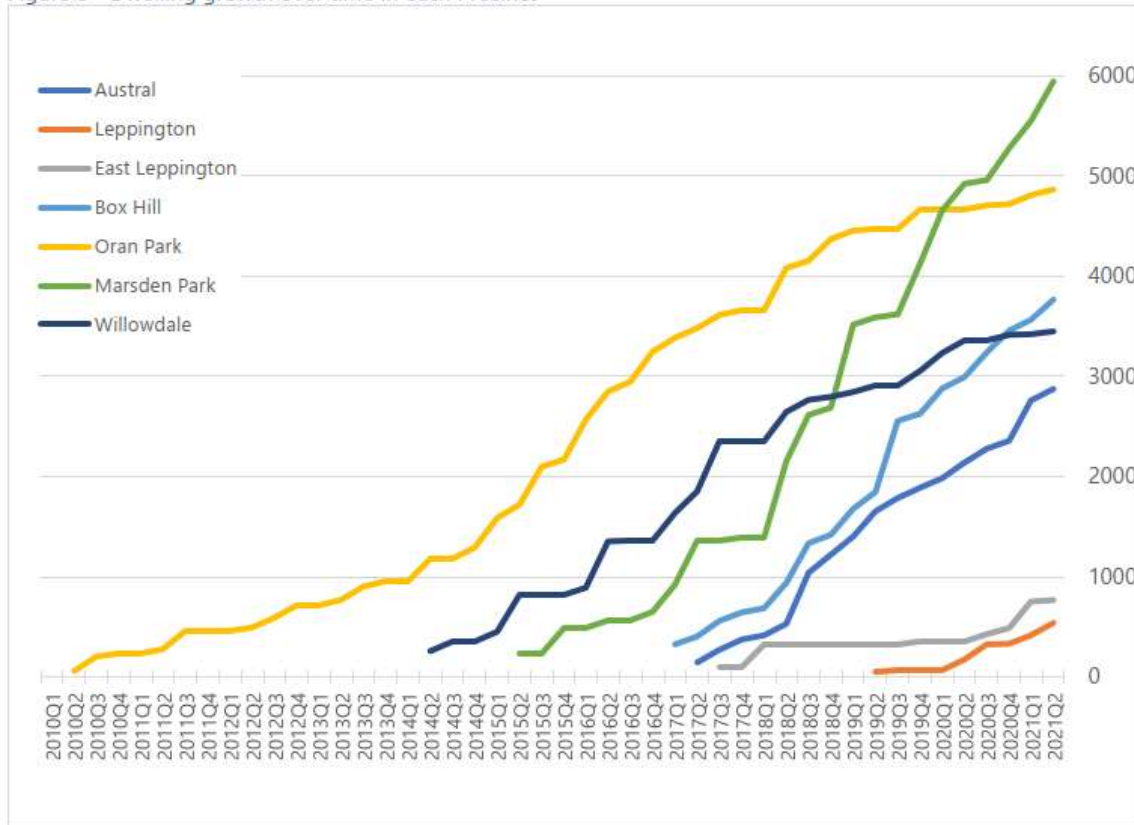


Table 2 - Average Annual Lot Production by Precinct

Austral	Leppington	East Leppington	Box Hill	Marsden Park	Willowdale	Oran Park
678	248	210	815	849	436	418

Growth for each precinct in 2021 through 30 June was doubled to annualize the data.

Source: infrastructure & development consulting (2021)

IPARTs review of the Contributions Plan 2021 will facilitate the uncapping of local development contributions that for typical low density residential development at 20 dwellings per hectare (typical of the majority of Austral and Leppington North) will equate to a contribution of \$68,520³ per lot. For a typical 1.2ha parcel in Austral, this equates to an increased contribution of \$924,480. Assuming delivery and finance costs remain constant, this represents a reduction of nearly \$1M in the value a developer can offer a landowner to acquire their land. This additional cost alone is likely to significantly stall the transition of rural land acquisitions until such time as there is growth in the housing market that is currently plateaued or in decline.

For development applications currently in the system and not yet determined, an increase in contributions of this magnitude overnight would likely have significant implications on the viability of that development and lead to a practice of land banking until there is greater increases in

³ Not adjusted for \$215,000 cost saving recommended by IPART that has no material Impact given It represents 0.02% of the total Infrastructure funded by the Contributions Plan.

housing values, further stagnating the supply of new housing in the Austral and Leppington North Precincts.

Recommendation 7.1: As outlined earlier, a staged or transitioned approach to the increase in contributions should be applied to development in the Austral and Leppington North Precincts, similar to how the cap on local contributions was phased out previously.

On its own, an increase in development costs might have a shorter recover period for impacts to supply, but in the case of Austral and Leppington North, two other significant pieces of infrastructure funding reform are to be progressed over the next 1 to 2 years that will coincide with the increased local contribution rates as follows:

- **State Infrastructure** - Move from a current \$233,583/ha Special Infrastructure Contributions. Based on the typical delivery of 20 dwellings per hectare, this equates to \$11,680/lot. With the incumbent Government confirming their support for a new Regional Infrastructure Contribution, notionally at \$12,000/lot, say indexed to current CPI represents \$13,500/lot or increase of \$1,820/lot on top of local contributions increases in Austral and Leppington North.
- **Sydney Water Development Servicing Plans** – As recently exhibited, Sydney Water intend to apply Development Servicing Plan charges on development in Austral and Leppington North starting in July 2024. These charges will be phased in over two years (25% starting in July 2024, 50% in July 2025 and full charges application in July 2026) and represent an additional development cost of \$26,587/lot (\$5,311/lot water charge, \$21,276/lot sewer charge).

When viewed holistically, the impending development charges represent an additional cost of \$66,927/lot or for a typical Austral development of 1.2ha and additional cost of \$1.6M. The effect of these combined charges are likely to significantly stall development with the Austral and Leppington North Precincts until significant growth in the housing market occurs to offset these costs given borrowing is becoming tighter, financing costs are increasing and the construction costs have yet to significantly decline following the supply and skill shortage impacts of COVID 19.

Recommendation 7.2: Both IPART and the State Government are urged to holistically consider the impacts of infrastructure funding changes and their effects on housing supply in the Austral and Leppington North Precincts and broader western Sydney release areas prior to piecemeal implementation.

8. Conclusion

We appreciate both Council's and IPART's efforts in progressing the review of Contributions 2021 that will provide for the future delivery of infrastructure in the Austral and Leppington North Precincts. Significant concern is raised however with the efficacy of the stormwater management regime that underpins the plan and whether it represents a fair and reasonable cost compared to the earlier approach of Contributions Plan 2014 and warrants further interrogation by IPART.

Given the significant increase in development costs the increase in rates Contributions Plan 2021 will instate requires care to be taken in the implementation of Contributions Plan 2021 so as to not stall the supply of new housing within the Austral and Leppington North Precincts. This has become even more critical given the State Government's other infrastructure reform initiatives currently being pursued for the Regional Infrastructure Contribution and Development Servicing Plans. In this vein, IPART's consideration of recommendations to facilitate the phasing in of the new rates under Contributions Plan 2021 would greatly assist in minimising the disruption to the delivery of new housing in the precincts.

We trust this submission will be of assistance in the progression of the amendment package. Should you require any further details or wish to discuss any aspect of this submission, please don't hesitate to contact me on [REDACTED]

Regards,

Mina Hanna
Development Director

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PO Box R155 Royal Exchange NSW 1225

www.vantageproperty.com.au

The logo for vantageproperty, featuring a stylized star icon with blue and green points to the left of the text "vantageproperty" in a sans-serif font.

Appendix A _ Civil Engineering Matters

The Liverpool City Council proposal to de-centralise WSUD devices in the amendments to the Austral Leppington North Contributions Plan has a number of issues that we do not believe have been fully thought through, or costs considered. Having recently finalised construction of the first subdivision in the ALN Precinct (Vantage property Group's Austral Estate Stages 3&4) with these streetscape raingardens we have gained valuable insights into the challenges and cost of implementing them at scale.

Inefficiencies of Streetscape Raingardens

Raingardens in the road reserve only treat surface runoff that they can capture. In any land subdivision, approximately one-third to a half of the lots contain inter-allotment drainage lines. These lines discharge to stormwater pits, not at surface in the road reserve, meaning that all of these flows are not treated by the raingardens. This means that a very large proportion of the land is not being treated for water quality at all.

In addition to this, there are general inefficiencies with numerous small basins in lieu of fewer large ones. The general rule of thumb is that the volumetric inefficiency of several smaller basins is usually a factor of 0.33 to 0.5, meaning that up to twice as much basin area is required to gain the same water storage.

Maintenance Burden

Similar to the above, the maintenance burden of several small raingardens is obvious. With Operations and Maintenance costs being one of the major cost stresses to local government it would appear short-sighted to spread the WSUD load over such a large number of small, spread-out facilities. Further, the streetscape raingardens contain no pre-treatment by Gross Pollutant Traps (GPTs) meaning that they will become clogged with sediment very quickly. This will place a considerable maintenance burden on them, or if left not maintained compromise their performance almost immediately.

Further below in this submission is a photo of a newly installed streetscape raingarden – which shows is that there is no substantial soil/fill material sitting behind the kerb. Any vehicle bumping the kerb (which is a common occurrence) is likely to cause significant damage to the kerb/road infrastructure. This will again, place a maintenance burden on Council that is not necessary.

Recommendation: That Council reinstate regional basin strategies that will take up less land, reduce maintenance burdens, reduce "hidden "developer" costs and be far more efficient from a water quality perspective.

Other More Suitable Land is Available

In Austral Leppington North, there are several planned open space and riparian corridors that have sufficient space for basins. This land would not add to the acquisition burden and give Council sufficient land for the required basins.

Further, there are several road reserves that Council already owns that will not be required for roads in future, based on the ALN ILP. An example of this is the western end of Thirteenth Avenue, where the road reserve is not a current or future road in the ILP. This one available parcel of road reserve land is approximately 2,750m² which could replace dozens of these smaller basins on land that requires no acquisition and is almost directly adjacent to Kemps Creek.

Recommendation: That Council review the required WSUD basin footprints with consideration to land along riparian corridors and open space as well as redundant road reserves and the like that are already in Council ownership.

Additional Costs

We have undertaken an analysis of the actual costs incurred on the Vantage Property Group's Austral Estate Stages 3 & 4 project. This is shown below.

Austral Estate Stages 3 & 4 - Raingarden Costs				
Temporary Raingarden Silt Trap Construction				
Excavation for silt traps (0.6m deep)	40	Each	\$325.00	\$13,000.00
Construct temporary silt traps at road intersections in accordance with Council Drawing 30013411-018 (incl trim batters)	1,247	m ²	\$3.30	\$4,115.10
Kerb Openings to suit in accordance with Council Drawing 30013411-018	90	Each	\$90.00	\$8,100.00
Provide Grated Drains in accordance with Council Drawing 30013411-021	34	m	\$2,500.00	\$85,000.00
300mm high drop edge along footpath / shared path in accordance with Council Drawing 30013411-020	493	m	\$195.00	\$96,135.00
Temporary Scour protection (100mm thick)	501	m	\$27.50	\$13,777.50
Temporary Turf	1,247	m ²	\$12.50	\$15,587.50
Additional Depth (2.5-3.0m) for Electrical Conduits to be installed beneath Raingarden & Drainage				
2 x 125mm	85	m	\$90.00	\$7,650.00
4 x 125mm	30	m	\$180.00	\$5,400.00
6 x 125mm	30	m	\$270.00	\$8,100.00
Temporary paraweb fencing to silt traps	1,017	m	\$10.00	\$10,170.00
Extra Over Costs to Accommodate Raingarden Construction in other Construction Items				
Additional Water Reticulation Costs				

100mm bend (to avoid PW retic going through raingardens)	40	each		\$220.00	\$8,800.00
Recover hydrant bend DN100mm Main (to avoid PW retic going through raingardens)	2	each		\$2,400.00	\$4,800.00
Insert 45deg bend into existing DICL main (DN100) (to avoid PW retic going through raingardens)	4	Item		\$3,000.00	\$12,000.00
Insert 45 deg bend with SV-HC to existing DICL main (DN100) (to avoid PW retic going through raingardens)	4	Item		\$3,600.00	\$14,400.00
Extra 100m PVC required to divert water reticulation around raingardens	55	m		\$60.00	\$3,300.00
Additional stabilised sand (20:1 mix) trench backfill to subgrade level for the additional water reticulation in roadways to divert around raingardens	196	m		\$120.00	\$23,520.00
Additional Electrical Costs					
Concrete Encasement (min 75 mm Concrete Encase -15MPA 22.5-degree bends 1m beyond transition. Bends necessary to divert electrical ducts below raingardens)	48	m		\$1,100.00	\$52,800.00
Extra Kerb Length due raingarden construction	59	m		\$85.00	\$4,972.50
				Sub-Total	\$391,627.60
Allowance for Design, Contractor Prelims, Establishment, etc.				15%	\$58,744.14
				TOTAL (Initial Works)	\$450,371.74
Conversion to Raingardens once 80% lots built out					
Remove temporary topsoil and turf from Item 7.3 to allow for raingarden completion	1,213	m ²		\$ 5.00	\$6,065.00
Excavate and remove from site soil	970.4	m ³		\$ 35.00	\$33,964.00
Connect Raingarden Drainage to Trunk Stormwater Network	171	m	\$ 50.00		\$8,550.00
bio retention media	1,213	m ²	\$ 20.00		\$24,260.00
150mm Gravel Drainage Layer	1,213	m ²	\$ 25.00		\$30,325.00
30mm Coarse Sand and Carbon Source Submerged Zone	1,213	m ²	\$ 3.00		\$3,639.00
100mm Coarse Sand Transition Layer	1,213	m ²	\$ 9.00		\$10,917.00
400mm Sandy Loam Filter Media	485	m ³	\$ 105.00		\$50,946.00
100mm Pebble mulch	1,213	m ²	\$ 25.00		\$30,325.00
Bio Retention Planting (tube stock @ 4/m ²)	1,213	m ²	\$ 24.00		\$29,112.00
				Sub-Total	\$228,103.00
Allowance for Design, Contractor Prelims, Establishment, etc.				15%	\$34,215.45
				TOTAL (Permanent)	\$262,318.45
				Grand Total (Temp + Permanent Works)	\$712,690.19

From the above, it can be seen that the hidden additional costs related to diverting below ground services around the basins at intersections is a constructability and cost impost. The additional water and electricity costs of almost \$500/dwelling (on this project alone) adds up to almost \$120,000. On top of this, the temporary silt trap construction phase (pre-raingarden construction) adds a further \$1,315/dwelling – a total of almost \$2,000 per dwelling in hidden and temporary costs.

In addition to this, the above cost analysis shows that under the proposed regime, the total raingarden costs are in the order of \$550 - \$600/m² whereas a comparable basin recently designed in Camden LGA in the Leppington Precinct was in the order of \$350/m².

Further, once the area inefficiencies are taken onto account (where at least an additional 50% of raingarden basin area will be required) the cost impact of the decentralised basins does not appear to have been thoroughly considered.

Appearance and streetscape impacts

In addition to being extremely inefficient from a cost and land use perspective, the appearance of streetscape raingardens is less than ideal, this is at least in part due to the maintenance burden leaving these unmanaged. The below image taken from Waratah Park in Sutherland shows a streetscape raingarden that has not been maintained. It has become clogged with sediment and is no longer performing any water quality improvement function.

Figure 1 - Unmanaged Streetscape Raingarden



Even in its newly constructed state at Austral Estate Stage 3 & 4, the maintenance issues are already obvious.

Figure 2 - Newly Constructed Raingarden (silt trap phase - pre-raingarden)



Conclusion

As one of the few developments that have successfully delivered streetscape raingardens, we are in the unique position to be able to provide current and on-the-ground advice to Council and IPART regarding the implementation of these measures. It is clear that they will put a heavy cost burden on the developers, put upward pressure on home prices and provide Council with several ongoing maintenance issues.

Several alternatives appear available to Council, with missed opportunities to place centralised raingardens on land already owned by Council that has no other future function and is suitable for basins.

The operational and cost inefficiencies show that centralised basin options should be pursued, as per the original water management plans for ALN.