

Independent Pricing and Regulatory Tribunal
New South Wales

Assessment of revised Section 94 Contributions Plan No 21 – Marsden Park

Blacktown City Council

Report
Local Government

August 2017



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Contents

1	Executive Summary	1
1.1	Why is IPART reviewing CP21 again?	2
1.2	How does IPART assess a contributions plan?	4
1.3	Overview of CP21	5
1.4	Summary of our assessment	7
1.5	The impact of our recommendations	14
1.6	Findings and recommendations	18
1.7	Structure of this report	26
2	Overview of Contributions Plan No 21 – Marsden Park	27
2.1	Status of CP21	27
2.2	Development in the MPP and the MPIP	28
2.3	Proposed cost of land and facilities in CP21	31
2.4	Proposed contribution rates in CP21	32
3	Assessment of CP21 – transport	35
3.1	Transport facilities in CP21	36
3.2	Criterion 1: Essential Works List	37
3.3	Criterion 2: Nexus	38
3.4	Criterion 3: Reasonable transport facility costs	46
3.5	Criterion 3: Reasonable transport land costs	48
3.6	Criterion 5: Apportionment	53
4	Assessment of CP21 – stormwater	59
4.1	Stormwater management in the MPIP and MPP	60
4.2	Criterion 1: Essential Works List	60
4.3	Criterion 2: Nexus	60
4.4	Criterion 3: Reasonable stormwater facility costs	70
4.5	Criterion 3: Reasonable stormwater land costs	83
4.6	Criterion 5: Apportionment	87
5	Assessment of CP21 – open space facilities	97
5.1	Criterion 1: Essential Works List for open space	97
5.2	Criterion 2: Nexus for open space	101
5.3	Criterion 3: Reasonable open space facility costs	106
5.4	Criterion 3: Reasonable open space land costs	116
5.5	Criterion 5: Apportionment of open space facilities	118
6	Assessment of CP21 - Community services, combined precinct facility and plan administration	119
6.1	Community services	120
6.2	Combined precinct facilities	122
6.3	Our assessment of plan preparation and administration costs	124
7	Assessment of CP21 – timing and consultation	125

7.1	Criterion 4 Timeframe for infrastructure delivery	125
7.2	Criterion 6: Consultation	127
8	Assessment of CP21 – other matters	128
8.1	CP21 complies with legislative information requirements	128
8.2	Recommend development contributions charged for education land	129
8.3	Recommend regular review of population estimates for CP21	129
	Appendices	132
A	Terms of Reference	134
B	Infrastructure Items on the Essential Works List	135
C	Stormwater cost analysis	136
D	Assessment of CP21 against the information requirements in Clause 27 of the EP&A Regulation	141
E	Nexus review of roundabouts in CP21, ARRB Group Ltd Report	142

1 Executive Summary

The NSW Government has asked the Independent Pricing and Regulatory Tribunal (IPART) to review contributions plans that have been prepared by councils under section 94 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and which propose contribution rates above a capped amount.¹

Blacktown City Council (BCC) submitted *Contributions Plan No 21 – Marsden Park* (CP21) to IPART for assessment in December 2016. This is the second time that BCC has submitted a version of CP21 for review. We previously assessed BCC’s application for CP21 in 2012, as a new contributions plan applying only to the Marsden Park Industrial Precinct (MPIP). In 2016, BCC drafted a new version of CP21 applying to the MPIP and the Marsden Park Precinct (MPP), both within Sydney’s North West Priority Growth Area, and publicly exhibited the proposed amendments in September and October 2016.

BCC estimates the total costs of the contributions plan to be around \$980.8 million, and that the maximum contribution payable is around \$101,538 per residential lot.² This is above the maximum contribution cap of \$30,000 per lot set by the NSW Government that applies to the contributions plan.³

We make 27 recommendations across the assessment criteria for cost reductions and other items to review that would reduce the cost of CP21 by up to \$256 million or 26% in the short term. However, the more likely outcome is for costs to be reduced by around \$196 million or 20% over the longer term, with reasonable open space costs being reinstated in the plan. The final impact on costs will depend on the outcomes from a range of the recommendations. Overall, we found:

- ▼ \$725 million of the proposed costs are reasonable as proposed in CP21, although some should be subject to further review
- ▼ \$144 million of the proposed costs are unreasonable and should be removed from the plan, and
- ▼ a further \$112 million of open space embellishment costs (for items such as amenities blocks and landscaping) are unreasonable, as proposed, and should be removed until BCC determines more reasonable costs to reinstate into the plan.

We have estimated more reasonable costs based on benchmarks for the open space embellishment items in section 5.3 to be around \$60 million. However, we recommend that BCC review its estimates specific to the relevant sites, where possible, rather than relying on benchmarks.

¹ See the Terms of Reference at Appendix A.

² CP21, p 38.

³ Minister for Planning and Infrastructure, *Environmental Planning and Assessment (Local Infrastructure Contributions) Direction 2012*, 21 August 2012, cl 6(3) and sch 2, cl (15).

We also recommend that BCC revise the population projections in CP21 once the proposed increases to residential densities recently placed on exhibition, are incorporated into the planning framework for Marsden Park. Indications are that based on these revised dwelling yields per hectare, the projected residential population will exceed the current estimates by approximately 25%.⁴ This suggests a need for further open space to cater for the additional residents, in particular, and will also likely reduce the final contributions per dwelling.

1.1 Why is IPART reviewing CP21 again?

IPART is required to assess contributions plans submitted to us for review and report our findings to the Minister for Planning and the council.

The *Revised Local Development Contributions Practice Note: For the assessment of Local Contributions Plans by IPART*⁵ requires a council to submit an amended plan to IPART for assessment if it wishes to seek alternative funding sources to fund the gap between development contributions and infrastructure costs in the plan (see Box 1.1) and:

- ▼ the scope of works has increased
- ▼ the geographical catchment of the plan has increased
- ▼ the cost estimates of the works have increased (not including updates for actual costs), or
- ▼ the method of apportionment of costs has changed.⁶

IPART's previous assessment of CP21 recommended minor reductions to the \$318.6 million costs. In May 2013 BCC adopted *Section 94 Contributions Plan No 21 – Marsden Park Industrial Precinct* (referred to in this report as CP21-2012), implementing most of the recommendations IPART made.

The plan which BCC has now submitted for IPART's review covers a greater catchment area and scope of works, and includes increased cost estimates for both land and works. The revised CP21 incorporates MPP, primarily zoned for residential development, as well as MPIP, zoned mainly for industrial and business park uses.

During our assessment of CP21, the Government announced changes to the local contributions framework under its Housing Affordability Strategy.⁷ The changes, which are outlined in Box 1.1, have not affected our assessment of CP21. In addition, the Government placed on exhibition proposals to increase the densities of residential development in the North West Priority Growth Area, in which Marsden Park is located. When adopted, the increased densities will increase the estimated population, which may have the result of reducing contributions rates per lot.

⁴ See discussion in section 8.3.

⁵ Department of Planning & Infrastructure, *Revised Local Development Contributions Practice Note: For the assessment of Local Contributions Plans by IPART*, February 2014 (Practice Note).

⁶ Practice Note, p 5.

⁷ The Housing Affordability Strategy was announced on 1 June 2017.

Box 1.1 IPART's role in reviewing contributions plans

In 2010 the NSW Government introduced caps on the amount of section 94 development contributions that councils can collect. Under this policy, unless the Minister for Planning exempts the development area,^a councils could levy development contributions to a maximum of:

- ▼ \$30,000 per dwelling or residential lot in greenfield areas, and
- ▼ \$20,000 per dwelling or residential lot in all other areas.

The NSW Government also conferred to IPART the function of reviewing certain plans with contribution rates above the relevant cap. Our terms of reference are in Appendix A of this report.

Since October 2011 IPART has assessed 13 contributions plans from the Hills Shire Council, Blacktown City Council, Wollongong City Council and Bayside Council. Reports on these contributions plans were presented to the Minister for Planning and the councils, and are available on our website.

Under the Local Infrastructure Growth Scheme (LIGS), the NSW Government provides funding for councils where the cost of delivering essential infrastructure is greater than the amount the council can collect from capped contributions. Councils can also apply for a special rate variation to meet the funding shortfall that results from the imposition of caps. Councils must have their plans reviewed by IPART to be eligible for LIGS funding or to apply for a special rate variation.

On 1 June 2017 the Government announced changes to the local contributions framework. These changes were enacted with an Amended Ministerial Direction released on 28 July 2017.^b Under the changes, IPART will still be responsible for assessing contributions plans in the following circumstances:

- ▼ For designated areas^c, caps on contributions will apply under transitional arrangements whereby the caps will increase incrementally in three stages to \$45,000. Councils will be able to apply for LIGS funding for the shortfall, subject to IPART assessment. After 30 June 2020, LIGS funding will cease, and these areas will revert to the caps and arrangements applying to all other areas.
- ▼ For plans for all other areas, councils proposing contributions above the current caps must submit them to IPART for review, after which it may levy the full amount of contributions that reflects the IPART-assessed costs of essential infrastructure.

^a The Minister for Planning exempted all developments where, as of August 2010, the amount of development that had already occurred exceeded 25% of the potential number of lots. The Department of Planning and Environment has advised that developments subject to this exemption were assessed on application from relevant councils. This exemption remains in force under the revised framework announced on 1 June 2017.

^b The *Environmental Planning and Assessment (Local Infrastructure Contributions) Amendment Direction 2017* was published 28 July 2017 on the DPE website. The Direction was given by the Minister for Planning under s94E of the *Environmental Planning and Assessment Act 1979* to all councils, Sydney region planning panels and joint regional planning panels exercising the consent authority functions of one or more councils. It amends the 2012 Direction.

^c The transitional arrangements apply to development covered by those plans already 'in the system' ie, already assessed by IPART or within the Sydney Priority Growth Areas and rezoned. This includes the MPP and MPIP.

1.2 How does IPART assess a contributions plan?

IPART assesses plans in accordance with the criteria set out in the Practice Note. The criteria require us to assess whether:

- ▼ the public amenities and public services in the plan are on the essential works list (see Appendix B)
- ▼ the proposed public amenities and public services are reasonable in terms of nexus⁸
- ▼ the proposed development contribution is based on a reasonable estimate of the cost of the proposed public amenities and public services
- ▼ the proposed public amenities and public services can be provided within a reasonable timeframe
- ▼ the proposed development contribution is based on a reasonable apportionment of costs
- ▼ the council has conducted appropriate community liaison and publicity in preparing the contributions plan, and
- ▼ the plan complies with other matters IPART considers relevant.

As outlined in Box 1.1, this assessment is required if a council wishes to seek State Government funding⁹ or a special variation to fund the gap between development contributions and infrastructure costs in the plan. The Practice Note therefore limits the scope of essential infrastructure eligible for this additional funding. Councils may still provide public amenities and public services beyond the criteria in the Practice Note;¹⁰ however LIGS or special variation funding beyond the capped contributions is not available for these purposes.

1.2.1 Our consultation in this assessment

We have based our assessment of CP21 on information provided by BCC in responses to several information requests, and have consulted further with the council including during a site visit and meetings. Initially, we found the information supporting the land acquisition cost estimates in CP21 to be insufficient to assess the reasonableness of the estimates but in response to our request, the council provided further information and a set of revised land acquisition cost estimates based on the advice of an external valuer.

BCC officers provided comments on a draft of this report, along with further information, including new open space embellishment cost estimates, which we considered in finalising our assessment.¹¹

⁸ Nexus ensures that there is a connection between the land and facilities in a contributions plan and the demand for them arising from the additional population as a result of the new development.

⁹ State Government funding is currently provided through the Local Infrastructure Growth Scheme (LIGS).

¹⁰ This includes public amenities and public services that are not on the essential works list or that are above base level embellishment.

¹¹ For practical reasons, we have referred to these as BCC comments throughout our report but we acknowledge that unlike the plan submitted for our assessment, other supplementary information and comments were not endorsed formally by the council.

Throughout our assessment process, we also consulted with the Department of Planning and Environment (DPE), including on a draft of this report.

In addition, we liaised with various consultants, including J. Wyndham Price, concerning the findings and recommendations in their technical studies and cost estimates for CP21.

To assist with our assessment of transport infrastructure in the plan, we engaged an independent transport engineering consultant, ARRB Group Ltd (ARRB). ARRB's report on whether certain intersections that were not recommended in the supporting technical study are reasonable in terms of nexus is in Appendix E.

Following our assessment, the Minister for Planning will consider our recommendations and may request BCC to amend the contributions plan.

1.3 Overview of CP21

CP21 covers two separate precincts in Sydney's North West Priority Growth Area, in the Blacktown local government area (LGA):

- ▼ Marsden Park Precinct (MPP), which is predominantly residential, and
- ▼ Marsden Park Industrial Precinct (MPIP).

The total gross area of both precincts is around 2,350 hectares, comprising 1,800 hectares in the MPP and 550 hectares in the MPIP.

When fully developed, the MPP and MPIP are expected to accommodate 33,742 additional residents in 11,536 additional dwellings.¹² The precincts also contain around 333.2 hectares for town centres, business parks and industrial zones, that altogether are expected to accommodate around 10,000 jobs when development is complete.

1.3.1 Cost of land and facilities in CP21

The total cost in CP21 that BCC proposed to recover through development contributions is around \$981 million, of which 52% represents the construction of facilities and 48% land acquisition (see Table 1.1). Plan administration costs are set at 1.5% of the total cost of facilities, amounting to 0.8% of total plan costs.

¹² CP21, pp 5-6. While current assumptions are for a population of 33,742, the draft *North West Priority Growth Area Land Use and Infrastructure Implementation Plan* projects a population of close to 44,900 in the Marsden Park and Marsden Park Industrial Precincts. See discussion in section 8.3.

Table 1.1 CP21 – Total proposed cost of land and facilities (\$June 2016)

	Land	Facilities	Total
Transport	55,912,620	88,116,152	144,028,772
Stormwater management	243,211,749	241,516,270	484,728,019
Open space	148,836,865	174,287,621	323,124,486
Community services	4,191,000	-	4,191,000
Combined precinct facilities ^a	14,432,521	2,713,179	17,145,700
Administration			7,599,499
Total plan costs	466,584,755	506,633,222	980,817,476

^a Costs relating to a conservation zone and a combined aquatic facility/ community centre/ library that are apportioned to CP21.

Source: CP21, Appendix H and IPART calculations.

1.3.2 Contribution rates for residential developments

Table 1.2 shows the proposed contribution rates in CP21 for different dwelling types in the MPP and MPIP. All residential contribution rates are above the contributions cap of \$30,000 per dwelling or lot set by the NSW Government.

Table 1.2 Proposed residential development contributions in CP21 (\$June 2016)

Catchment	Dwellings per hectare	Persons per dwelling	Contribution per dwelling (\$)
Marsden Park Precinct			
South Creek MPP	12.5	2.9	67,229
	15	2.9	61,012
	25	2.7	45,645
Little Creek MPP	12.5	2.9	74,952
	15	2.9	67,450
	25	2.7	48,899
Marsden Creek MPP	15	2.9	100,029
	25	2.7	66,416
	35	2.7	55,403
Bells Creek MPP	12.5	2.9	101,538
	15	2.9	89,616
	25	2.7	60,771
Marsden Park Industrial Precinct			
Bells Creek MPIP	40	2.7	38,653
Marsden Creek MPIP	28	2.7	45,884
	40	2.7	43,185
Little Creek MPIP SWQ4	28	2.7	48,408
Little Creek MPIP SWQ7	28	2.7	54,736

Source: CP21, p 38.

1.3.3 Contribution rates for non-residential development

Non-residential development accounts for 333.2 hectares in CP21. This includes land zoned for town centres, business parks and industrial development.

Table 1.3 shows the range of proposed indicative contribution rates across the sub-catchments in each precinct for non-residential land based on the costs proposed in CP21. The non-residential contribution rate is calculated using the rates for stormwater quantity, stormwater quality and transport outlined in Chapter 2 (Table 2.4).

Table 1.3 Range of indicative non-residential contribution rates (\$June 2016)

	MPIP	MPP
Contribution rate per hectare	\$590,637 – \$771,922	\$446,820 – \$966,106

Source: IPART calculations based on CP21, Appendix I.

1.4 Summary of our assessment

Our assessment of CP21 against each of the criteria in the Practice Note is summarised in Table 1.4. All our findings and recommendations are listed in section 1.6.

1.4.1 Essential Works List

We found that most of the land and infrastructure included in CP21 is on the Essential Works List (EWL), with the exception of 'type 3' landscaping of open space, which we have assessed as predominantly having an environmental or bush regeneration purpose. Environmental works are excluded from base level embellishment unless they serve a dual purpose.¹³ A dual purpose does not exist in this case as access to the landscaped area by the public is limited. We recommend the full cost of landscaping 'type 3' work be removed from the plan, which would reduce its cost by \$6.0 million.

1.4.2 Nexus

Overall we found that nexus was established for most transport, stormwater and open space infrastructure.

However, we found that the demand for upgrading Stony Creek Road arises independent of the development in CP21 and the width of two proposed bridges appears to be excessive, even to meet flood evacuation needs. We have recommended that the council consult further, at least with the NSW State Emergency Service (SES), in relation to the need for wider bridges given its concerns about safety and liability issues, before reinstating higher costs in the plan. Our consultant, ARRB, also advised that the proposed 'roundabout 1' would have a negative traffic management impact at the designated location and therefore nexus was not established for this item.

Since IPART's assessment of CP21 in 2012, BCC identified an intact chain of ponds tributary of Little Creek (TLC) that requires particular protection. BCC has included stormwater quality and quantity works in this amended version of CP21 (CP21-2016), designed to manage stormwater from the proposed development and to protect the TLC.

On balance, we have found that nexus has been established for these stormwater works to achieve ideal stormwater outcomes to protect the pre-development conditions at the TLC. However, we also consider that greater clarity is required around the circumstances in which the relevant water quality and environmental flow targets apply. To this end, we recommend that DPE review and clarify in the Practice Note the relevant stormwater management objectives that apply to stormwater works funded through contributions plans.

In addition, we recommend that for the South Creek catchment, which includes the Sydney North West and South West Growth Areas, the Minister should require stormwater management planning to occur at the whole of catchment/regional level to achieve more efficient management outcomes. We note BCC is currently undertaking a review of the relevant stormwater management needs of the South Creek catchment, and that CP21 would need to be amended to implement any resultant variations to the proposed infrastructure needs in the MPP and MPIP should a catchment-wide planning approach be adopted.

We do not consider the apparent over-provision of open space land in CP21 (3.25ha/1000 compared with the accepted benchmark of 2.83ha/1000 residents) is unreasonable. The use of more than 25% of the land is constrained by transmission easements and existing native vegetation. Further, there are indications the final residential population will exceed the

¹³ Practice Note, p 10.

estimates in the plan by approximately 32%,¹⁴ which would result in a rate of provision below the benchmark.

1.4.3 Reasonable cost

The proposed costs of providing land and infrastructure for transport, stormwater, open space and community services in CP21 have increased significantly since they were estimated at the precinct planning stage. Based on information available at the time of precinct planning for the MPP, DPE estimated it would cost approximately \$29,000 per dwelling to provide infrastructure in the MPP.¹⁵ Depending on the assumed development yield per hectare and occupancy rates, CP21 now proposes indicative contributions per dwelling in MPP of between \$45,645 and \$101,583.¹⁶

The higher level of contributions reflects recent increases to land values experienced in the Sydney metropolitan area. It is also partly attributable to increases since 2012 in the estimated costs of stormwater infrastructure and open space embellishment (discussed below). Such significant growth in capital costs highlights the importance of having accurate costings earlier in the planning process to better understand the likely costs of providing local infrastructure to meet the needs arising from planned development.

Land costs

We found that BCC has used a reasonable approach for costing land already acquired, including the actual amount for which the land was acquired, indexed by CPI.

For land not yet acquired, the costs originally proposed by BCC were based on unclear assumptions about the underlying zoning rates and the proportion of constrained and unconstrained land to be acquired. During our assessment, we requested that BCC provide additional information, such as an external valuation of all the land, to support its land costs.

Subsequently, BCC provided revised land acquisition costs that are more transparent and based on external valuations of the underlying zoning rates, applied to individual lots. We found the application of the different rates to the land to be acquired for infrastructure items has enabled a more rigorous assessment of the cost estimates. We support this level of detail being provided to inform land acquisition cost estimates in contributions plans, and understand that BCC plans to adopt this costing approach in preparing its land acquisition estimates in its other contributions plans in future.

The revised land acquisition estimates result in a net increase to the proposed cost of land in the plan of \$953,000 to \$467.5 million. This outcome is the combined effect of higher valuation rates for land with residential and commercial zonings (reflecting recent strong market conditions) and a greater area of land being considered constrained, therefore valued lower.

¹⁴ See discussion in section 8.3.

¹⁵ DPE, *Marsden Park Precinct – Post-Exhibition Planning Report*, August 2013, p 5. The amount of that contribution rate indexed is \$30,636 (\$June 2016).

¹⁶ IPART calculation based on CP21, p 38.

Adopting BCC's revised land costs has resulted in an increase to the cost of land for transport (\$30.8 million) and community facilities (\$10.8 million), as well as decreases to the cost of land for stormwater (\$7.2 million) and open space (\$33.4 million).

The acquisition estimates for stormwater and open space facilities were revised downwards as a result of the greater area of assumed constrained land but the higher valuation rates resulted in a net increase to the land acquisition estimates for transport and community facilities.

We found that in most cases, the estimates were based on reasonable assumptions about the relevant underlying zonings and the proportions of the land that are constrained. However, in assessing the specific parcels of land to be acquired, we have identified some land for transport, stormwater and open space infrastructure for which the revised costings do not reflect the existing constraints. We acknowledge that the higher unconstrained rates have been applied by BCC in these cases to account for the development potential of the site because remediation or other engineering work could be undertaken. Nonetheless, there would be costs involved in this work, and these costs have not been accounted for in the expected land costs.

We have therefore recommended reductions to the cost estimates for the four parcels of land by \$24.8 million.

Capital works costs

In assessing cost, we found the proposed cost of transport works is reasonable and note that BCC has used the same costing methodology that IPART has previously assessed as reasonable, using actual rates to inform the unit rates in the plan.

We have found, however, that stormwater infrastructure costs are unreasonably high. They are high compared with the cost estimates of consultants, J. Wyndham Prince, who prepared the stormwater management strategies for CP21, and compared with other existing contributions plans. Our analysis suggests that these high costs arise from high excavation and cartage rates and from underlying assumptions about construction methods and the composition of excavated material. We recommend BCC remove \$95.4 million in stormwater infrastructure costs, representing 39.5% of stormwater infrastructure costs in CP21.

Costs per person for open space infrastructure are also high in CP21, and exceed those in every other contribution plan for a greenfield area IPART has reviewed. Accordingly, we recommend that BCC review and update costs for open space infrastructure. For specific works, namely playing fields, amenities buildings, tennis courts, car parking, landscaping and the youth recreation facility, we consider that the costs are not reasonable. These costs require revision and we recommend BCC remove an amount of \$112 million from CP21 pending the outcome of the recommended review of these costs. We estimate, based on benchmarks, that a more reasonable cost estimate for this work is around \$60 million.

Open space embellishment costs are based on estimates provided by a quantity surveyor (QS) in December 2012 and costs for specific items are commonly higher than those for the same items in other BCC plans. Although the council provided a new set of 2016 QS cost estimates for embellishment items in response to our draft report, we had further concerns

with the reasonableness of these estimates, and in particular, the standard and scope of embellishment work that was costed generically for the items. We consider it is timely for BCC to not only update the estimates for each item and reserve, based on site-specific plans and detailed designs, but also to review aspects of the costs such as contingency allowances and the extent of embellishment in some reserves.

1.4.4 Apportionment

BCC's approach to apportioning open space and community facility costs in CP21 is reasonable. However we identified issues with elements of the proposed apportionment approach for transport and stormwater.

In relation to transport, we found that BCC's apportionment of collector roads across all residential development in the MPP creates an inequitable distribution of costs when other developers are also providing collector roads as conditions of consent, and without offsets to section 94 contributions. To make contributions towards collector roads in the MPP more equitable, we recommend that BCC apportion the cost of the Grange Avenue upgrade to a new traffic catchment west of Richmond Road only, consistent with its preference for this approach in response to our draft report. As in previous reviews, we also recommend that BCC apportion transport costs to residential development by population (per person) instead of area (per hectare of net developable area) to better reflect the demand created for transport infrastructure. The council advised it will do so in its next review of CP21.

In relation to stormwater infrastructure, we found that BCC's division of the Little Creek catchment in the MPIP into sub-catchments for the purposes of apportioning stormwater quality management costs, does not reflect its approach to stormwater quality management and therefore creates an unfair distribution of costs. We recommend that BCC apportion the cost of stormwater quality management in the MPIP Little Creek catchments across the whole catchment to reflect its water quality treatment strategy.

We also recommend that BCC improve the transparency of the contribution rates for stormwater quality in the MPIP and MPP by providing rates for both low density residential and for other developable land, as relevant.

1.4.5 Timing

CP21 proposes the delivery of stormwater and transport infrastructure, and most open space facilities, in three 5 to 6-year tranches from 2016 to 2032. We assess that this approach to the staging of infrastructure provision is reasonable and find evidence to date suggests that the proposed infrastructure will be delivered in a timely fashion.

Almost half the fields and courts for active recreation will be located on the former landfill site. BCC resolved to deliver the facilities in 15 years (by around 2030), which we consider reasonable. It balances the higher cost of undertaking the remediation work sooner against the delay in providing half of the active open space needs of new residents.

Table 1.4 Summary of IPART's assessment of CP21 (\$June 2016)

Infrastructure type and criterion	Assessment against criteria of the Practice Note
TRANSPORT	
Essential works	All transport infrastructure items are on the EWL.
Nexus	<p>There is reasonable nexus between the expected development and most transport infrastructure but BCC should remove the cost of:</p> <ul style="list-style-type: none"> ▼ the extra width (20.8m) of two bridges, each of which should be reduced to a 14m width, unless BCC's consultations with relevant agencies, including emergency service providers, justify increasing the design parameters (- \$8.0 million) ▼ the upgrade of Stony Creek Rd, which is independent of the development in CP21 (-\$6.9 million), and ▼ roundabout 1 which is not appropriate at this location (-\$0.3 million).
Reasonable costs	<p><i>Land costs</i></p> <ul style="list-style-type: none"> ▼ The methodology for costing transport land acquired in CP21 is reasonable. ▼ BCC should adopt its revised methodology for costing land yet to be acquired and adjust the cost estimate for road reserve R1 to reflect a more reasonable assessment of the extent to which this land is constrained. This will result in a net increase in the cost of land for transport infrastructure in CP21 of \$23.5 million. <p><i>Infrastructure costs</i></p> <ul style="list-style-type: none"> ▼ Cost estimates for transport infrastructure are reasonable.
Apportionment	<p>The apportionment of transport costs in CP21 is reasonable except for:</p> <ul style="list-style-type: none"> ▼ the upgrade of Grange Ave which should be apportioned to a new traffic catchment west of Richmond Road only, to make contributions towards collector roads more equitable across the MPP, and ▼ the apportionment of transport costs to residential development on the basis of area, when apportionment on a population basis better reflects the demand created for transport infrastructure.
STORMWATER	
Essential works	All stormwater infrastructure items are on the EWL.
Nexus	<ul style="list-style-type: none"> ▼ There is reasonable nexus between the expected development and stormwater infrastructure, including, on balance, between the proposed stormwater management strategy for the MPIP Little Creek catchment to achieve ideal stormwater outcomes and development in this catchment. ▼ To assist with the preparation and assessment of contributions plans, DPE should review and clarify, in the Practice Note, the relevant stormwater management objectives that apply to stormwater works funded through contributions plans so that it is clear in which circumstances each stormwater objective applies. ▼ For the South Creek catchment, the Minister should require stormwater management planning to occur at the catchment/regional level to achieve more efficient management outcomes. ▼ BCC should amend CP21 to implement any future findings relevant to management of the South Creek catchment.
Reasonable costs	<p><i>Land costs</i></p> <ul style="list-style-type: none"> ▼ The methodology for costing stormwater land acquired in CP21 is reasonable. ▼ BCC should adopt its revised methodology for costing land yet to be acquired and adjust the cost estimates for channels L3.6 and M1.2 to reflect a more reasonable assessment of the extent to which this land is constrained. This would result in a net reduction in the cost of land for stormwater infrastructure in CP21 of \$13.0 million.

	<p><i>Infrastructure costs</i></p> <p>Cost estimates for stormwater infrastructure in CP21 are unreasonably high, arising from high rates used by BCC and unreasonable underlying assumptions. BCC should reduce stormwater infrastructure costs by \$95.5 million, comprising:</p> <ul style="list-style-type: none"> ▼ Reductions to stormwater basin costs (-\$78.1 million) ▼ Reductions to raingarden costs (-\$3.2 million), and ▼ Reductions to channel costs (-\$14.2 million). <p>BCC should also review culvert costs, incorporating assumptions similar to those on which the other revised costs are based.</p>
Apportionment	<p>The apportionment of stormwater costs in CP21 is reasonable except for the division of MPIP Bells Creek and MPIP Little Creek into small stormwater quality catchments based on development type, which does not reflect BCC's approach to stormwater quality management.</p> <ul style="list-style-type: none"> ▼ We recommend that costs be apportioned at the catchment rather than sub-catchment level for MPIP Little Creek where, unlike Bells Creek, the contributions have not yet been collected. ▼ To improve the transparency of contribution rates for stormwater quality in CP21, BCC should include the stormwater quality contribution rates in the MPIP and MPP for both low density residential land and for other developable land, as relevant.
OPEN SPACE AND COMMUNITY SERVICES	
Essential works	<p>Most open space and community land and infrastructure are on the EWL, but BCC should remove the cost of landscaping 'type 3' which predominantly forms environmental, bush regeneration works.</p>
Nexus	<p>Nexus between open space and community land and facilities in CP21 and the expected development in the MPP and MPIP has been established, noting:</p> <ul style="list-style-type: none"> ▼ the use of some land is constrained by transmission easements and existing native vegetation, ▼ the proposed embellishment of some reserves does not take account of constraints on its use, and ▼ there is evidence that the final population in the precincts will be approximately 32% higher than originally projected.
Reasonable costs	<p><i>Land costs</i></p> <ul style="list-style-type: none"> ▼ The methodology for costing land acquired for open space and community services in CP21 is reasonable. ▼ For land yet to be acquired for open space, BCC should adopt its revised costing methodology and adjust the cost estimate for Reserve 1002 to reflect a more reasonable assessment of the extent to which this land is constrained. This would result in a net reduction in costs of \$45.2m. ▼ For land yet to be acquired for community services and combined precinct facilities, BCC should adopt its revised costing methodology, which would increase the cost by \$3.9 million and \$6.8 million respectively. <p><i>Infrastructure costs</i></p> <ul style="list-style-type: none"> ▼ The proposed cost for remediation of the former Grange Avenue landfill site (estimated at \$33 million) is reasonable. ▼ Open space embellishment costs per person in CP21 are higher than the reasonable costs in comparable plans for greenfield areas reviewed by IPART. We recommend BCC review costs of all open space infrastructure items. ▼ Costs of some items are reasonable, but estimates for a number of specific infrastructure items appear excessive when compared with costs in other plans, IPART benchmarks or other published industry benchmarks. ▼ We recommend BCC remove the costs for playing fields, amenities buildings, tennis courts, car parking, landscaping and the youth recreation facility from CP21, pending the recommended review. This removes \$112.0 million from the costs in CP21 in the short term. When BCC has

	established a reasonable cost for each of these items, their costs can be reinstated to the plan.
Apportionment	Apportionment of costs for open space and community land and facilities is reasonable.
Plan administration	Plan administration costs are based on the IPART benchmark of 1.5% of capital costs (\$7.6 million). Based on our recommended reductions to capital costs, the costs reduce to \$4.2 million but the estimate will need to be revised again once BCC establishes reasonable cost estimates for open space embellishment, and potentially, culverts.
Timing	BCC's approach to the staging of infrastructure provision in CP21 is reasonable and the evidence to date suggests that the proposed infrastructure will be delivered in a timely fashion.
Consultation	Appropriate community liaison and publicity was conducted in the preparation of CP21.
Other matters	<ul style="list-style-type: none"> ▼ CP21 complies with the information requirements in the EP&A legislation and is generally consistent with the Practice Note. ▼ Unless the Minister issues a Section 94E exemption for education land, BCC should include 13.96 hectares of public school land in the developable land area for the purpose of calculating transport and stormwater contributions given school development would contribute to the need for this infrastructure. ▼ BCC should review the population estimates in CP21 based on development yields achieved to date, before LIGS funding is granted and thereafter, review the population estimates regularly to reflect the higher densities proposed for the SEPP.

1.4.6 Consultation and other matters

Finally, we found BCC had adequately liaised with the community concerning the plan, and that it generally complied with the other requirements under EP&A legislation.

1.5 The impact of our recommendations

Table 1.5 shows the potential net impact of our recommendations on the reasonable cost of essential works in CP21 in the short term.

We estimated that IPART's recommendations would reduce the \$980.8 million cost of CP21 by \$256.0 million. This reflects:

- ▼ removing \$144 million for the cost of land and works which do not meet the EWL, nexus or reasonable cost criteria in the Practice Note, and
- ▼ removing a further \$112 million which is the cost of open space embellishment which we consider to be inflated. Once the council has established a reasonable cost for these items, it may reinstate that amount into the plan.

Therefore, based on our recommendations, the assessed reasonable cost of the plan at this stage is \$724.8 million. However, the final impact of our recommendations would depend on the outcome of a range of our other recommendations, including:

- ▼ reviewing the \$24 million cost of culvert works in light of our other recommendations to reduce stormwater cost estimates (Recommendation 13), and
- ▼ reviewing the costs of all items of open space infrastructure (Recommendation 19).

Table 1.5 IPART's assessment of the total reasonable cost of essential works in CP21 (\$June 2016)

Infrastructure category and recommended adjustments	Cost in plan	IPART-recommended adjustment	IPART-assessed reasonable cost
Transport land and works	144,028,772		
Reduce the width of bridges to 14m		(8,018,000)	
Remove upgrade of Stony Creek Rd		(6,945,000)	
Remove the upgrade of roundabout 1		(272,500)	
Adopt revised land costs		30,838,000	
Reduce the cost acquiring of 'R1'		(7,318,744)	
Total transport adjustment		8,283,756	152,312,528
Stormwater land and works	484,728,019		
Reduce stormwater basin costs		(78,099,747)	
Reduce raingarden costs		(3,190,615)	
Reduce channel costs		(14,173,815)	
Adopt revised land costs		(7,217,000)	
Reduce the cost of acquiring L3.6		(1,333,000)	
Reduce the cost of acquiring M1.6		(4,326,624)	
Total stormwater adjustment		(108,340,801)	376,387,218
Open space land and works	323,124,486		
Remove landscaping 'type 3'		(5,963,123)	
Remove costs of excessive open space items ^a		(112,038,471)	
Remove plans of management		(46,117)	
Adopt revised land costs		(33,393,000)	
Reduce cost of acquiring Reserve 1002		(11,774,004)	
Total open space adjustment		(163,214,715)	159,909,771
Community facilities land and works^b	21,336,700		
Adopt revised land costs		10,725,000	
Total open space and community facilities adjustment		10,725,000	32,061,700
Plan administration	7,599,499	(3,431,211)	4,168,288
Total cost of CP21	980,817,476		
IPART-recommended adjustments		(255,978,051)	
IPART-assessed reasonable costs			724,839,425

^a After a review of costs for these items, BCC may reinstate an amount that represents their reasonable cost.

^b Community facilities includes the shared conservation facility.

Note: Numbers may not add due to rounding. Plan administration costs will need to be updated for any further amendments to capital works costs.

Source: IPART calculations based on CP21.

1.5.1 Impact on contribution rates

Table 1.6 shows the interim impact of our recommendations on some indicative residential contribution rates in CP21, incorporating our recommendations to:

- ▼ remove \$144 million for the cost of land and works which do not meet the EWL, nexus or reasonable cost criteria in the Practice Note
- ▼ remove a further \$112 million which is the cost of open space embellishment we consider to be inflated and therefore potentially unreasonable (we have recommended that the council revise the costs to a reasonable amount and then they may be reinstated into the plan), and
- ▼ apportion the cost of stormwater quality management in MPIP Little Creek across the whole MPIP Little Creek catchment.

The ultimate impact on contribution rates from our recommendations will be different from those in Table 1.6, as they will also incorporate adjustments to the costs in the plan noted in relation to Table 1.5 following the outcome of our recommendations to:

- ▼ review assumptions underlying the cost of culverts (costs which we consider may be too high),
- ▼ review the costs of six items of open space embellishment we found unreasonable, after which BCC can reinstate into the plan an amount representing the reasonable costs of providing that infrastructure,
- ▼ reapportion the cost of the Grange Avenue upgrade to a new traffic catchment area only, bounded by Richmond Road to the west, Vine Street West to the north, South Street to the south and the Environmental Conservation area to the east (Recommendation 6), and
- ▼ update the population estimates to reflect DPE's most recent estimates.

Table 1.6 Indicative residential development contributions in CP21 based on IPART-assessed reasonable costs (\$June 2016)

Catchment	Dwellings per hectare	Persons per dwelling	Contribution rate	IPART assessed adjustment
Marsden Park Precinct				
South Creek MPP	12.5	2.9	67,229	-21,454
	15	2.9	61,012	-18,514
	25	2.7	45,645	-11,501
Little Creek MPP	12.5	2.9	74,952	-28,479
	15	2.9	67,450	-24,370
	25	2.7	48,899	-14,405
Marsden Creek MPP	15	2.9	100,029	-28,580
	25	2.7	66,416	-14,901
	35	2.7	55,403	-11,659
Bells Creek MPP	12.5	2.9	101,538	-20,875
	15	2.9	89,616	-18,044
	25	2.7	60,771	-9,182
Marsden Park Industrial Precinct				
Bells Creek MPIP	28	2.7	45,884	-16,645
	40	2.7	38,653	-13,601
Marsden Creek MPIP	40	2.7	43,185	-13,696
Little Creek MPIP SWQ4	28	2.7	48,408	-18,350
Little Creek MPIP SWQ7	28	2.7	54,736	-24,678

Source: CP21, p 38.

Note: We have assumed that transport costs are apportioned to residential development on a 'per person' basis but have not incorporated a reapportionment of certain transport costs to a new traffic catchment area (Recommendation 6). The ultimate impact on contributions rates will depend on the final catchments for stormwater and transport, and the outcomes from a range of our other recommendations, including whether public school land is included in the NDA.

Table 1.7 shows the indicative impact of our recommendations on the proposed non-residential contribution rates in CP21 (noting that such rates do not include contributions for any costs of open space infrastructure.¹⁷).

Table 1.7 Indicative range of non-residential contribution rates (\$June 2016)

	MPIP	MPP
BCC proposed contribution rate per hectare	\$590,637 – \$771,922	\$446,820 – \$966,106
IPART assessed contribution rate per hectare	\$486,586 – \$741,197	\$388,698 – \$889,310

Source: IPART calculations based on CP21, Appendix I.

Note: The ultimate impact on contributions rates will depend on the final catchments for stormwater and transport, and the outcomes from a range of our other recommendations, including whether public school land is included in the NDA.

¹⁷ We have recommended a review of the costs of six items of open space embellishment which we found to be unreasonable, after which BCC can reinstate into the plan an amount representing the reasonable costs of providing that infrastructure.

1.6 Findings and recommendations

1.6.1 Transport

Criterion 1: Essential Works List (EWL)

IPART finding

- 1 All transport infrastructure items in CP21 are on the Essential Works List.

Criterion 2: Nexus

IPART finding

- 2 BCC has established nexus between the proposed transport infrastructure and development in CP21 for all transport items, except for:
 - two bridges (ML4.0 and ML4.1), where it is not clear that the extent of the proposed widths are necessary, even for flood evacuation needs
 - the upgrade of Stony Creek Rd, where the demand for the proposed upgrade to a collector road standard does not arise from the new development in the precincts, and
 - one roundabout ('1'), which is not an appropriate intersection control method at the designated location and should be replaced with a T-intersection.

Recommendations

- 1 BCC consult further, at least with the NSW State Emergency Service (SES), to determine the minimum widths required for bridges ML4.0 and ML4.1 but in the interim, reduce the widths from 20.8m to 14.0m, thereby reducing the cost in CP21 by \$8,018,000.
- 2 BCC remove the cost of the proposed upgrade of Stony Creek Rd (\$6,945,000) from CP21.
- 3 BCC remove the cost of roundabout R1 (\$272,500) from CP21.

Criterion 3: Reasonable transport facility costs

IPART finding

- 3 The proposed cost of transport works is reasonable.

Recommendation

- 4 BCC amend the cost of the bridges once designs and detailed costings are prepared to reflect the narrower 14.0m bridges, or bridge widths advised in consultation with at least the SES.

Criterion 3: Reasonable transport land costs

IPART findings

- 4 The original proposed land acquisition cost for all infrastructure in CP21 (\$466,584,755) was based on unclear assumptions about the underlying zoning rates and the proportion of constrained and unconstrained land to be acquired.
- 5 The revised land acquisition cost provided by BCC during our assessment (\$467,537,755) is more transparent and based on valuations of individual lots to be acquired, informed by advice on the average underlying zoning rates by an external valuer, and more reasonable assumptions about the proportions of the lots which are constrained and unconstrained.
- 6 Consistent with Finding 5, the revised land acquisition cost for transport infrastructure is reasonable, except:
 - the cost estimate for road reserve 'R1', which assumes that all land is unconstrained (with underlying zoning areas of B7, R3 HOB 16, IN1 and IN2) when 80% of the land is currently constrained.

Recommendation

- 5 BCC increase the proposed cost of acquiring land for transport purposes in CP21 by \$23,519,256 to \$79,431,876, reflecting BCC's revised cost estimates (an increase of \$30,838,000) and an adjusted valuation for road reserve 'R1' to assume that 80% of the land is constrained (a reduction of \$7,318,744).

Criterion 5: Apportionment

IPART finding

- 7 The apportionment of transport infrastructure is reasonable except for:
 - The apportionment of collector roads across all residential development in the MPP, which creates an inequitable distribution of costs when other developers are also providing collector roads as conditions of consent.
 - The apportionment of transport costs to residential development by area, when the population better reflects the demand created for transport infrastructure.

Recommendations

- 6 To make contributions towards collector roads more equitable across the MPP, BCC apportion the cost of the Grange Avenue upgrade to a new traffic catchment area only, bounded by Richmond Road to the west, Vine Street West to the north, South Street to the south and the Environmental Conservation area to the east.
- 7 BCC apportion transport costs to residential development by population (per person) instead of area (per hectare of net developable area) in its next review of CP21.

1.6.2 Stormwater

Criterion 1: Essential Works List

IPART finding

- 8 All stormwater infrastructure items in CP21 are on the Essential Works List.

Criterion 2: Nexus

IPART findings

- 9 There is reasonable nexus between the stormwater items in CP21 and the expected development in the MPIP and MPP, including:
- on balance, reasonable nexus between the proposed stormwater management strategy for the MPIP Little Creek catchment to achieve ideal stormwater outcomes, and the expected development in this part of the precinct.
- 10 The water quality and environmental flow targets, established by the (former) Department of Environment, Climate Change and Water (DECCW) to inform stormwater infrastructure needs for new development, do not specify the circumstances in which the different stormwater objectives (“stormwater management objective” or the “ideal stormwater outcome”) should apply.
- 11 The current planning and delivery of stormwater infrastructure on a precinct, rather than a broader catchment level, might lead to sub-optimal outcomes.

Recommendations

- 8 DPE review and clarify in the Practice Note the relevant stormwater management objectives that apply to stormwater works funded through contributions plans so that it is clear in which circumstances each stormwater objective applies.
- 9 For areas within the South Creek catchment, the Minister require that stormwater management planning occur at the catchment or regional level, rather than at the precinct level, to achieve more efficient management outcomes across the entire catchment.
- 10 BCC amend CP21 following the completion of its review of the South Creek catchment to implement any relevant findings in relation to stormwater management.

Criterion 3: Reasonable stormwater facility costs

IPART findings

- 12 The cost estimates for stormwater infrastructure in CP21 are high for stormwater basins, raingardens and channels, arising from high prices and rates used by BCC and underlying assumptions that are not reasonable.

- 13 Consultant costings are not available to compare BCC's costs estimates for culverts in CP21, however these estimates incorporate the same underlying assumptions that have been identified as not reasonable for other stormwater infrastructure costs.

Recommendations

- 11 BCC remove \$95,464,177 in stormwater infrastructure costs, comprising:
- \$78,099,747 for stormwater basins,
 - \$3,190,615 for raingardens, and
 - \$14,173,815 for channels.
- 12 BCC review the cost of culverts in CP21 and underlying assumptions that have been identified as contributing to high overall stormwater works cost estimates.

Criterion 3: Reasonable stormwater land costs

IPART finding

- 14 Consistent with Finding 5, the revised land acquisition cost for stormwater infrastructure is reasonable, except:
- the cost estimates for channels L3.6 and M1.2, which assumes that all land is unconstrained (with underlying zonings of IN2 and B7) when 50% and 80% of the land respectively is currently constrained.

Recommendation

- 13 BCC reduce the proposed cost of acquiring land for stormwater purposes in CP21 by \$12,959,704 to \$230,252,045, reflecting BCC's revised cost estimates (a reduction of \$7,300,000) and an adjusted valuation for channels L3.6 and M1.2 to assume that 50% and 80% of the land is constrained (a reduction of \$1,333,080 and \$4,326,624 respectively).

Criterion 5: Apportionment of stormwater costs

IPART findings

- 15 The apportionment of stormwater infrastructure in CP21 is reasonable except for the division of MPIP Little Creek into smaller stormwater quality catchments based on development type, which does not reflect BCC's approach to stormwater quality management and therefore results in an unfair distribution of costs.
- 16 The contribution rates for stormwater quality in the MPP are not transparent, in so far as further calculation is required to determine the contribution rate for some categories of land.

Recommendations

- 14 BCC apportion the cost of stormwater quality management in MPIP Little Creek across the whole catchment, to achieve a fairer distribution of the cost of stormwater quality works.
- 15 BCC include in CP21 the stormwater quality contribution rates in the MPIP and MPP for all developable land, as relevant.

1.6.3 Open Space

Criterion 1: Essential Works List for open space

IPART finding

- 17 The land and embellishment of open space in CP21 are consistent with the Essential Works List, except for:
 - the landscaping ‘type 3’ work which predominantly forms environmental, bush regeneration work.

Recommendation

- 16 BCC remove \$5,963,123 for the cost of landscaping ‘type 3’ work from CP21.

Criterion 2: Nexus of open space

IPART finding

- 18 Nexus has been established for the proposed open space in CP21, noting the constraints of the land, and that additional open space appears to be needed for the higher projected population for the precinct.

Recommendations

- 17 BCC review the extent of embellishment of open space land subject to transmission easements, particularly the assumed extent of landscaping needs.
- 18 BCC investigate opportunities for additional open space in the Marsden Park and surrounding precincts to cater for the needs of the higher projected population, including using more stormwater land for open space, and sharing facilities with schools.

Criterion 3: Reasonable open space facility costs

IPART findings

- 19 The proposed cost for remediation of the former Grange Avenue landfill site is reasonable.

-
- 20 The cost of open space embellishment in CP21, based on indexation of estimates by a quantity surveyor in 2012, is higher than the reasonable costs in comparable plans IPART has recently reviewed.
 - 21 Some of the costs in CP21 of open space facilities are reasonable, but costs for many of the items appear to be excessive and require revision (ie, costs for playing fields, amenities buildings, tennis courts, car parking, landscaping and the youth recreation facility).
 - 22 The costs of embellishment of reserves 995, 997, 999, and 1001 are excessive as in each case the total area of embellishment exceeds the area of the reserve.
 - 23 Additional costs for plans of management for the combined netball facility and remediation of Reserve 1006 are not reasonable because design (including project management) fees (10%) are already included in the cost estimates for the relevant works.

Recommendations

- 19 BCC undertake a review of the costs of all items of open space infrastructure to ensure the costs in CP21 are reasonable, based on up-to-date information, reflect the level of risk for the project stage, and more site-specific plans, where necessary.
- 20 Pending the outcome of the recommended review, BCC removes \$112,038,471 for the costs of the following facilities from CP21:
 - playing fields (\$27,501,399)
 - amenities buildings (\$12,013,084)
 - tennis courts (\$2,843,160)
 - car parking (\$10,254,705)
 - landscaping types 1 and 2 (\$57,266,300), and
 - youth recreation facilities (\$2,159,822).
- 21 BCC removes the additional costs for plans of management for the combined netball facility (\$39,885) and remediation of Reserve 1006 (\$6,232) from CP21.

Criterion 3: Reasonable open space land costs

IPART finding

- 24 Consistent with Finding 5, the revised land acquisition cost for open space infrastructure is reasonable, except:
 - the cost estimate for open space Reserve 1002 which assumes that all land is unconstrained (with an underlying zoning of R2) when 85% of the land is currently constrained.

Recommendation

- 22 BCC reduce the proposed cost of acquiring land for open space purposes in CP21 by \$45,704,004 to \$103,132,861, reflecting a decrease of \$33,393,000 for BCC's revised cost estimates and a further decrease of \$11,774,004 to acquire land for open space in Reserve 1002, based on the assumption that 85% of this land is constrained.

Criterion 5: Apportionment of open space facilities

IPART finding

- 25 BCC's approach to apportionment of open space facility costs in CP21 is reasonable.

1.6.4 Community services

Criterion 1: Essential Works List for community services

IPART finding

- 26 CP21 includes only the cost of land for community services, which is consistent with the Essential Works List.

Criterion 2 - Nexus for community services land

IPART finding

- 27 Nexus has been established for the proposed land for community services in CP21.

Criterion 3 – Reasonable community services land costs

IPART findings

- 28 Consistent with Finding 5, the revised land acquisition cost for community facilities is reasonable.
- 29 Land costs in CP21 could be reduced by \$4.87 million if the community centre, including the aquatic centre, were relocated on the Grange Avenue landfill site (Reserve 1006), as assumed in MacroPlan's technical study.

Recommendation

- 23 BCC increase the proposed cost of acquiring land for community facilities in CP21 by \$3,906,000 to \$8,097,000, reflecting BCC's revised cost estimates.

Criterion 5 - Apportionment of community services costs

IPART finding

- 30 BCC's approach to apportionment of community services land costs in CP21 is reasonable.

1.6.5 Combined precinct facilities

IPART findings

- 31 BCC can include the apportioned costs of the combined precinct facility in CP21.
- 32 Consistent with Finding 5, the revised land acquisition cost for the combined precinct facility is reasonable.
- 33 BCC can include the costs of the E2 Conservation zone in CP21.

Recommendation

- 24 BCC increase the proposed cost of acquiring land for the combined precinct facility in CP21 by \$6,819,000 to \$13,638,000 reflecting BCC's revised cost estimates.

1.6.6 Plan preparation and administration costs

IPART finding

- 34 Plan administration costs in CP21 are calculated using the IPART benchmark of 1.5% of the capital costs of infrastructure, which we consider to be a reasonable approach.

Recommendation

- 25 BCC reduce plan administration costs in CP21 so that they are 1.5% of the reduced capital cost which results from this assessment. Based on a reduced capital works amount of \$228,747,388, this reflects a reduction of \$3,431,211 in the interim.

1.6.7 Criterion 4: Timeframe for infrastructure delivery

IPART finding

- 35 BCC's approach to the staging of infrastructure provision in CP21 is reasonable, and the evidence to date suggests that the proposed infrastructure can be delivered in a timely fashion.

1.6.8 Criterion 6: Consultation

IPART finding

- 36 BCC conducted appropriate community liaison and publicity when preparing the amended CP21.

1.6.9 Other Matters

IPART findings

- 37 CP21 satisfactorily complies with the information requirements set out in the EP&A Act and Regulation and is generally consistent with the *Development Contributions Practice Note* (2005).
- 38 Although public schools create demand for transport and stormwater infrastructure, BCC has not included public school land in the developable land area within CP21 and so has not apportioned infrastructure costs to this development.
- 39 It is likely BCC has underestimated the final population for the MPP and MPIP in CP21.

Recommendations

- 26 BCC include the 13.96 hectares of public school land in the Net Developable Area (NDA) for the purpose of calculating transport and stormwater contributions given schools will create demand for this infrastructure, unless the Minister issues a section 94E exemption for education land.
- 27 BCC update the population estimates to reflect DPE's most recent estimates, and BCC continue to review the population regularly to ensure an appropriate provision of facilities and contributions in the plan, and to inform the planning needs of nearby precincts.

1.7 Structure of this report

The remainder of this report explains our assessment in more detail. Chapter 2 provides an overview of CP21 and Chapters 3 to 8 explain our assessment against the criteria in the Practice Note in detail.

Appendices and supporting information for our assessment are attached:

- ▼ Appendix A, the Terms of Reference for our review of contributions plans
- ▼ Appendix B, an explanation of infrastructure items on the EWL
- ▼ Appendix C, analysis supporting our assessment of stormwater infrastructure costs
- ▼ Appendix D, the assessment of CP21 against the information requirements in clause 27 of the *Environmental Planning and Assessment Regulation 2000*
- ▼ Appendix E, the report of the consultants ARRB Group Ltd
- ▼ Glossary.

2 Overview of Contributions Plan No 21 – Marsden Park

On 21 December 2016 IPART received *Section 94 Contributions Plan No 21 – Marsden Park* (CP21) for assessment from Blacktown City Council (BCC). CP21 covers two separate precincts: the predominantly residential Marsden Park Precinct (MPP) and the Marsden Park Industrial Precinct (MPIP), in the North West Priority Growth Area (formerly North West Growth Centre, then North West Priority Land Release Area).

The development is a mix of residential and industrial development. BCC's current assumptions provide for around 11,536 additional dwellings, 33,742 additional residents, and 10,000 jobs by completion of development.¹⁸ BCC has indicated development has occurred on around 15% of the MPIP and 5-10% of the MPP.

BCC estimates infrastructure costs in CP21 of around \$980.8 million. All contribution rates for residential development exceed the \$30,000 cap applicable to this precinct (we estimate the average residential rate is \$68,165 per dwelling). With the cap on contributions there is a funding shortfall of around \$470 million. BCC intends to meet the shortfall by applying for Local Infrastructure Growth Scheme (LIGS) funding.

2.1 Status of CP21

BCC formally adopted CP21 on 7 December 2016 and it came into force on 14 December 2016.¹⁹

This plan subsumes and replaces BCC's *Section 94 Contributions Plan No 21 – Marsden Park Industrial Precinct* which was adopted in May 2013. IPART assessed a draft of this plan (referred to in this assessment as CP21-2012) and reported to the Minister in September 2012, recommending a minor (1%) reduction to the \$318.6 million costs in that plan.²⁰

The revised plan incorporates MPP, estimated to accommodate around 30,240 new residents, as well as MPIP, which is zoned mainly for industrial and business park uses and will accommodate around 3,500 new residents. Providing infrastructure in the MPIP accounts for 24% of the \$980.8 million costs in the plan.²¹

¹⁸ While, current assumptions assume a population of 33,742, actual development approvals have indicated the population may be higher. See discussion in section 8.3.

¹⁹ BCC, Council Report CS360178 adopting Revised Section 94 Contributions Plan No 21, December 2016.

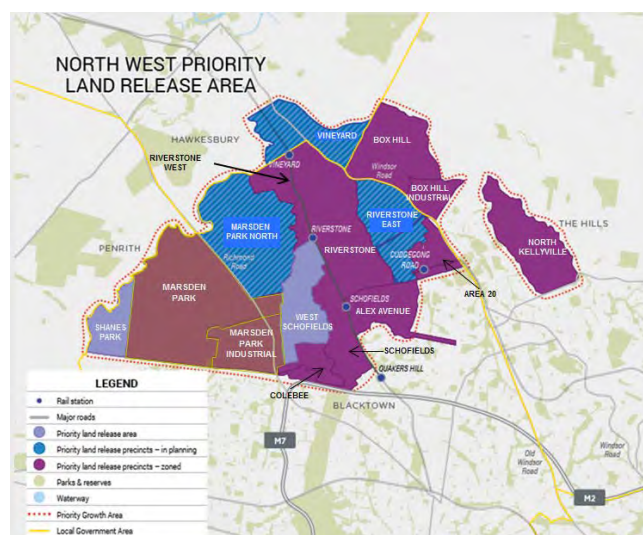
²⁰ IPART, *Assessment of Blacktown City Council's Draft Section 94 Contributions Plan No 21 – Marsden Park Industrial Precinct*, September 2012, p 4.

²¹ BCC, *Section 94 Contributions Plan No 21 – Marsden Park* (CP21), December 2016, Appendix H.

2.2 Development in the MPP and the MPIP

The precincts covered by CP21 are located in the North West Priority Growth Area (Figure 2.1), in the north-west of the Blacktown Local Government Area (LGA).

Figure 2.1 Marsden Park in the North West Priority Growth Area



Note: IPART has highlighted the MPP and MPIP in brown.

Source: DPE, *Northwest Priority Land Release Area Map*, at <http://www.planning.nsw.gov.au/Plans-for-your-area/Priority-Growth-Areas-and-Precincts/North-West-Priority-Growth-Area/Map>, accessed on 29 March 2017. The area has since been renamed the North West Priority Growth Area.

2.2.1 Development in the MPIP

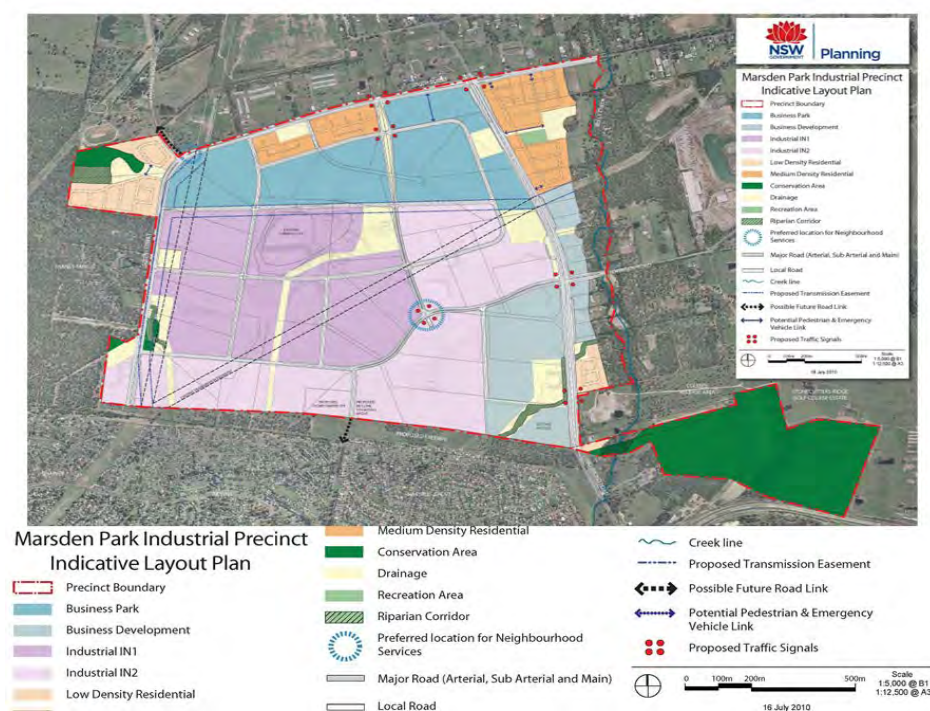
The MPIP has a total area of 550 hectares located to the south of the MPP. Planning for the MPIP was completed in 2010. BCC advises the MPIP is approximately 15% developed.²² When fully developed, the MPP will have a mix of industrial, business park, and low to medium density residential uses. The Indicative Layout Plan (ILP) for the MPIP is shown in Figure 2.2, and the land use mix in Table 2.1. Around 46 hectares of the MPIP will serve residential purposes, catering for 1,228 dwellings and 3,504 residents.²³ The ILP includes approximately 317 hectares of industrial and business zoned land that will provide space for 10,000 workers.²⁴

²² BCC, *Application for assessment of a section 94 development contributions plan – Blacktown City Council Section 94 Contributions Plan No 21 – Marsden Park*, December 2016, p 4.

²³ CP21, p 6.

²⁴ CP21, p 6.

Figure 2.2 Indicative Layout Plan – Marsden Park Industrial Precinct



Source: Department of Planning, *Marsden Park Industrial Precinct Indicative Layout Plan*, November 2011.

Table 2.1 Land use mix – Marsden Park Industrial Precinct

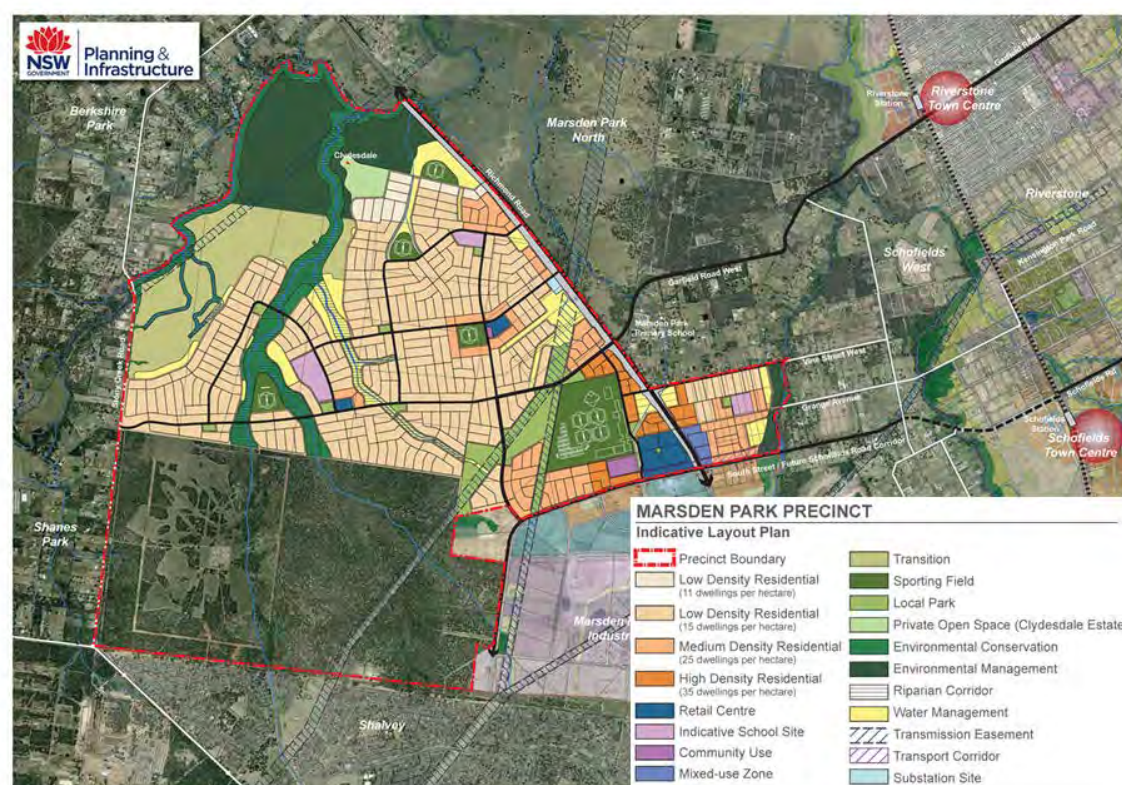
Land use (zoning)	Area (ha)
Detached Residential (R2)	17.2
Attached Residential (R3)	29.4
Business Park (B7)	70.6
Bulky Goods Retailing (B5)	39.8
General Industrial (IN1)	99.3
Light Industrial (IN2)	107.3
Drainage	35.9
Conservation and Open Space	63.6
Road Reserve	59.9
Bells Creek Corridor	27.5
Total	550.3

Source: CP21, p 6.

2.2.2 Development in the MPP

The MPP covers a 1,800 hectare area in the North West of the Blacktown LGA. Planning for the MPP was completed in 2013.²⁵ The ILP is Figure 2.3. BCC advised the MPP is 5-10% developed.²⁶ When fully developed, the MPP is expected to provide a mix of residential, retail, community and open space uses. Approximately 600 hectares of the site is allocated for residential development, which will provide for 10,308 dwellings and 30,238 residents.²⁷ Table 2.2 shows the land use mix in the MPP. A large portion of the land in the MPP (around 900 hectares) is undevelopable due to environmental conservation constraints. Land allocated as transition and environmental management, while having some residential use, is treated primarily as land allocated for conservation because the ILP allows for only 18 dwellings on a total of 223.5 hectares.²⁸

Figure 2.3 Indicative Layout Plan – Marsden Park Precinct



Source: Department of Planning and Infrastructure, *Marsden Park – Indicative Layout Plan*, October 2013.

²⁵ Department of Planning and Infrastructure, *Marsden Park Precinct Plan – Post-exhibition Planning Report*, August 2013.

²⁶ BCC, *Application for assessment of a section 94 development contributions plan – Blacktown City Council Section 94 Contributions Plan No 21 – Marsden Park*, December 2016, p 4.

²⁷ CP21, pp 5-6. (Note that 18 dwellings are on land zoned transitional or environmental management).

²⁸ BCC charge a contribution based on an area of 800m² for dwellings located in the RU6 and Environmental Management zones.

Table 2.2 Land use mix – Marsden Park Precinct

Land use	Area (hectares)	Estimated dwellings
Low density residential (11 dw/ha)	19.8	218
Low density residential (15 dw/ha)	462.0	6,930
Medium density residential (25 dw/ha)	88.9	2,223
High density residential (35 dw/ha)	26.3	919
RU6 Transition	107.0	10
Environmental Management	116.5	8
Total Residential	820.6^a	10,308
Total Mixed Use	5.3	
Total Schools	13.9	
Total Retail Centre	16.2	
Total Local Open Space	108.7	
Total Community Facilities	4.0	
Environmental Conservation	101.8	
Water Management	75.2	
SP2 Council Roads	12.3	
Private Open Space	10.5	
Substation	1.2	
Conservation (Shanes Park)	598.8	
Richmond Road and South Street reservation	30.0	
Marsden Park Precinct	1,801.9	

^a Around 200 hectares serves an environmental conservation purpose as either transition or environmental management land, so is not used for residential purposes.

Note: Numbers may not add due to rounding.

Source: CP21, p 5.

2.3 Proposed cost of land and facilities in CP21

The total proposed cost of CP21 is \$980.8 million, of which land comprises approximately 48% (\$466.6 million) and facilities approximately 52% (\$506.6 million). Plan administration costs are set at 1.5% of the total cost of facilities, a total of \$7.6 million which amounts to 0.8% of total plan costs. See Table 2.3.

Table 2.3 Proposed cost of land and facilities in CP21 (\$m, \$June 2016)

Infrastructure type	Land	Facilities	Administration	Total
Stormwater	243.2	241.5		484.7
Transport	55.9	88.1		144.0
Open Space	148.8	174.3		323.1
Community services	4.2	-		4.2
Combined precinct facilities ^a	14.4	2.7		17.1
Administration			7.6	7.6
Total	466.6	506.6	7.6	980.8

^a Costs relate to a conservation zone (Reserve 867 located in the Riverstone Precinct) and an aquatic facility/library/community centre (located in Marsden Park) each of which is apportioned to Marsden Park Precinct on the basis of the total population the facility will serve.

Source: CP21, Appendix H.

2.4 Proposed contribution rates in CP21

Contribution rates per lot or dwelling in CP21 are all above the cap of \$30,000. We estimate the average residential contribution rate in CP21 is \$68,165 per dwelling.

For all development in CP21, BCC proposes to levy the costs for stormwater and transport on a per hectare basis, according to the catchment or sub-catchment in which the development is located. Costs for open space and community services are levied on residential development only, and are levied on a per person basis. Table 2.4 sets out the contribution rates in CP21 for the different categories of infrastructure.

Table 2.4 Proposed contribution rates in CP21 (\$June 2016)

Catchment	Contribution rate
WATER MANAGEMENT	\$ per ha
STORMWATER QUANTITY	
<i>Marsden Park Industrial Precinct</i>	
Bells Creek	\$403,923
Marsden Creek	\$573,620
Little Creek	\$501,716
<i>Marsden Park Precinct</i>	
Bells Creek	\$639,594
Marsden Creek	\$775,755
Little Creek	\$354,656
South Creek	\$278,362
STORMWATER QUALITY	
<i>Marsden Park Industrial Precinct</i>	
Bells Creek – SWQ 1	\$31,291
Bells Creek – SWQ 2	\$103,402
Marsden Creek – SWQ 3	\$42,879

Little Creek - SWQ 4	\$76,328
Little Creek - SWQ 5	\$7,828
Little Creek - SWQ 6	\$21,862
Little Creek - SWQ 7	\$253,582
<i>Marsden Park Precinct</i>	
Bells Creek - SWQ 8	\$95,194
Marsden Creek - SWQ 9	\$115,144
Little Creek - SWQ 10	\$47,808
South Creek SWQ 11	\$27,572
TRAFFIC MANAGEMENT	\$ per ha
Marsden Park Industrial Precinct	\$155,423
Marsden Park Precinct	\$161,565
OPEN SPACE	\$ per person
Marsden Park	\$9,654
COMMUNITY FACILITIES	\$ per person
Marsden Park	\$124
COMBINED PRECINCT FACILITIES	\$ per person
E2 Conservation Zone	\$307
Aquatic Facility	\$202

Source: CP21, Appendix I, p 84.

2.4.1 Indexing contribution rates

BCC proposes to index contribution rates quarterly in accordance with CPI. The method BCC proposes to use is to index contribution rates using All Groups Sydney CPI at the time of payment and divide it by the June 2016 All Groups Sydney CPI. The base year of CP21 is June 2016.²⁹

2.4.2 Indicative residential contribution rates

The contribution rate for a residential lot or dwelling in CP21 varies according to the catchment in which it is located, and its assumed occupancy rate. Table 2.5 sets out indicative contribution rates for 18 different types of residential development across eight catchments, as specified in CP21. The rates range from \$38,653 to \$101,538.

²⁹ CP21, p 40.

Table 2.5 Proposed indicative residential contribution rates per dwelling (\$June 2016)

Density (dwellings per ha)	12.5	15	25	28	35	40
South Creek Marsden Park Precinct	67,229	61,012	45,645			
Little Creek Marsden Park Precinct	74,952	67,450	48,899			
Marsden Creek Marsden Park Precinct		100,029	66,416		55,403	
Bells Creek Marsden Park Precinct	101,538	89,616	60,771		51,366	
Bells Creek MPIP						38,653
Marsden Creek MPIP				45,884		43,185
Little Creek MPIP SWQ4				48,408		
Little Creek MPIP SQQ7				54,736		

Source: CP21, p 38.

2.4.3 Exclusions from contributions

BCC excludes development from paying contributions if it is not contributing to the demand for new infrastructure in the precincts or it is unable to practically collect section 94 contributions. Exclusions in the plan include:

- ▼ land in RU6 and Environmental Management zone that is unable to be developed
- ▼ public schools.³⁰
- ▼ State roads
- ▼ existing quarry
- ▼ Sydney Water reservoir
- ▼ a substation, and
- ▼ other infrastructure items, including roads, a transport corridor and council-owned community facilities.

In addition, for stormwater quality in the MPP, BCC considers development in higher density zonings (eg, B2 and R3) will only be required to contribute for 25% of their developable area, because BCC requires such development to provide onsite treatment.

³⁰ IPART recommends that land for public schools is included in the NDA because the school contributes to the demand for stormwater and transport infrastructure. This is discussed further in section 8.2 under the assessment of 'Other matters'.

3 Assessment of CP21 – transport

This chapter presents our assessment of the transport infrastructure in CP21 against the criteria in the Practice Note. To assist with our assessment, we engaged consultants ARRB Group Ltd (ARRB)³¹ who assessed the nexus for the proposed intersections that had not been recommended in the supporting technical study.

Our findings and recommendations are summarised in Table 3.1. We recommend savings of \$22.5 million, offset by the council's revisions to its land cost estimates of \$30.8 million. This results in a net increase to transport costs of \$8.3 million in CP21.

Table 3.1 Summary of IPART's assessment of transport infrastructure in CP21

Criterion	Finding	Recommendation	Cost adjustment (\$June 2016)
Essential Works List	All items are on the essential works list		
Nexus	Nexus has been established for all items except for:	The proposed 20.8m width for two bridges, which is excessive and should be reduced to 14.0m while BCC consults further with relevant agencies including emergency services providers	-\$8.0m
		The need for the upgrade of Stony Creek Road, which is independent of the development, and should be removed from the plan	-\$6.9m
		Roundabout 1 which is not an appropriate intersection control method at the designated location and should be removed	-\$0.3m
Reasonable costs	Proposed works costs are reasonable		
	BCC's revised land costs are reasonable except for:	The cost of road reserve R1 which should be adjusted to reflect the extent of the land's constraints	-\$7.3m
		BCC should adopt its revised land costs	\$30.8m
Reasonable apportionment	The apportionment approach is reasonable except:	The cost of Grange Avenue should be apportioned to a new traffic catchment area west of Richmond Rd only	
		The cost for residential development should be apportioned on a population basis	
Total IPART recommended cost adjustment			\$8.3m

³¹ See ARRB Group Ltd, *Nexus Review of Roundabouts in the Marsden Park Contributions Plan*, April 2017.

3.1 Transport facilities in CP21

Proposed transport costs in CP21 are \$144.0 million (15% of total costs), divided between works costs totalling \$88.1 million and land costs totalling \$55.9 million (Table 3.2).³²

Figure 3.1 and Figure 3.2 below indicate the locations of the proposed facilities.

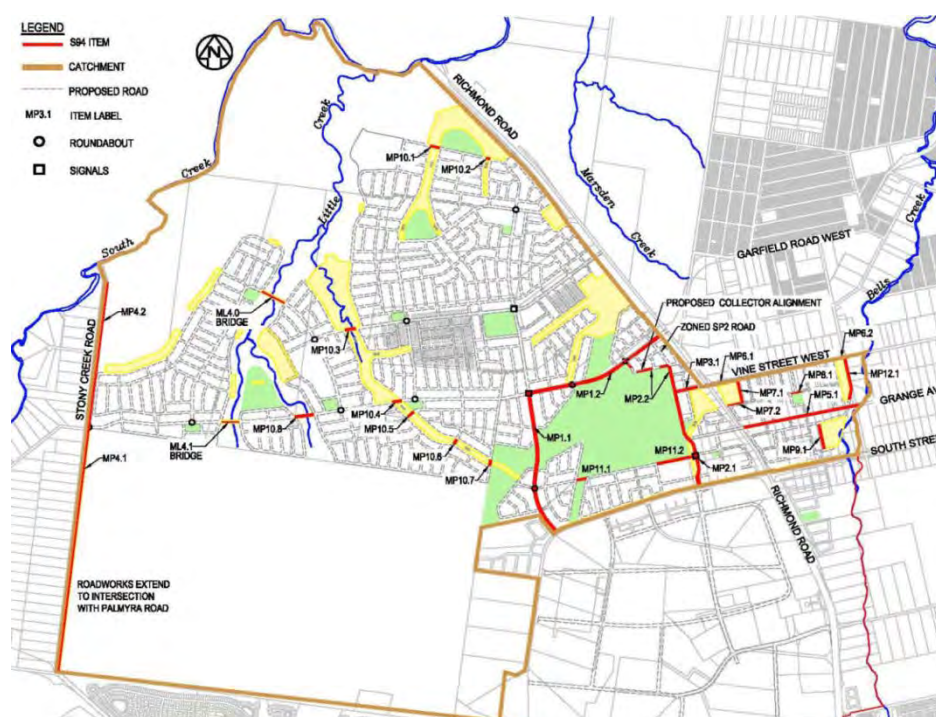
Table 3.2 Overview of transport items and costs in CP21 (\$June 2016)

Item	Cost in MPP	Cost in MPIP	Total cost
New roads	\$14,905,000	\$15,000,570	\$29,905,570
Road upgrades	\$18,715,000	\$10,050,982	\$28,765,982
Bridges	\$24,572,000	-	\$24,572,000
Culverts	\$1,732,000	-	\$1,732,000
Intersections	\$1,994,700	\$818,000	\$2,812,700
Bus stops	\$228,900	\$99,000	\$327,900
Land	\$35,450,211	\$20,462,409	\$55,912,620
Total	\$97,597,811	\$46,430,961	\$144,028,772

Note: This excludes plan administration costs from transport costs in CP21 (Appendix H, p 83).

Source: CP21, Works Schedules.

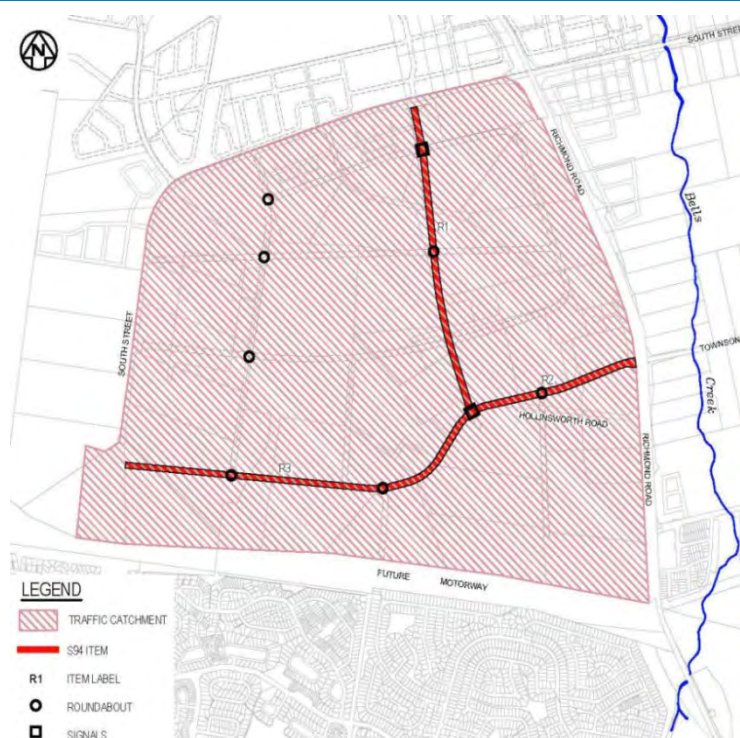
Figure 3.1 Proposed transport Items in the MPP



Data source: CP21 Appendix D1, p 73.

³² CP21, p 83.

Figure 3.2 Proposed transport items in the MPIP



Data source: CP21, Appendix B1, p 56.

3.2 Criterion 1: Essential Works List

We are required to assess whether the infrastructure included in CP21 is on the Essential Works List (EWL) outlined in the Practice Note (see Appendix B). Only the costs of 'essential works' are to be included in a plan when the council is seeking external funding for the infrastructure costs above the revenue provided for by the capped contributions..³³

IPART finding

- 1 All transport infrastructure items in CP21 are on the Essential Works List.

The EWL for transport infrastructure is:

Land and facilities for transport (for example, road works, traffic management and pedestrian and cyclist facilities), but not including car parking..³⁴

Table 3.3 shows our assessment that all transport infrastructure in CP21 is on the EWL.

³³ The EWL does not apply where councils levy contributions below the cap (Practice Note, p 8).

³⁴ Practice Note, p 8. We have previously interpreted this section of the Practice Note to mean that on-street car parking is on the EWL, but off-street car parking is not: see IPART, *Assessment of Wollongong City Council's Draft West Dapto Section 94 Contributions Plan*, October 2016, pp 39-42.

Table 3.3 Our assessment of transport infrastructure items against the EWL

Items on the Essential Works List	
▼	Road upgrades and new roads
▼	Bridges
▼	Culverts
▼	Roundabouts
▼	Signalised intersections
▼	Bus stops
▼	Land for essential transport infrastructure

3.3 Criterion 2: Nexus

IPART must advise whether there is nexus between the demand arising from new development and the public amenities and services to be provided. Nexus ensures that the infrastructure included in the contributions plan is sufficient to meet, but not exceed, the need generated by the increase in demand from the new development.

In assessing the nexus of transport infrastructure in CP21, we considered whether it is sufficient to meet the demand from the additional population in the MPP and MPIP precincts.

IPART findings

- 2 BCC has established nexus between the proposed transport infrastructure and development in CP21 for all transport items, except for:
 - two bridges (ML4.0 and ML4.1), where it is not clear that the extent of the proposed widths are necessary, even for flood evacuation needs
 - the upgrade of Stony Creek Rd, where the demand for the proposed upgrade to a collector road standard does not arise from the new development in the precincts, and
 - one roundabout ('1'), which is not an appropriate intersection control method at the designated location and should be replaced with a T-intersection.

Recommendations

- 1 BCC consult further, at least with the NSW State Emergency Service (SES), to determine the minimum widths required for bridges ML4.0 and ML4.1 but in the interim, reduce the widths from 20.8m to 14.0m, thereby reducing the cost in CP21 by \$8,018,000.
- 2 BCC remove the cost of the proposed upgrade of Stony Creek Rd (\$6,945,000) from CP21.
- 3 BCC remove the cost of roundabout R1 (\$272,500) from CP21.

3.3.1 Technical studies establish nexus for most transport items

BCC used four technical studies to establish nexus for most of the items:

1. ARUP, *Marsden Park Industrial (Employment) Precinct – Transport and Access Study*, August 2009 (ARUP 2009)
2. AECOM, *Marsden Park Precinct – Traffic and Transport Assessment*, April 2013 (AECOM 2013)
3. J Wyndham Prince, *Marsden Park Residential Precinct – Post Exhibition Water Cycle and Flood Management Strategy Report*, July 2013 (JWP 2013), and
4. Cardno, *Memorandum Re: Marsden Park Traffic Signals*, August 2013 (Cardno 2013).

The ARUP and AECOM studies used traffic modelling to establish a road hierarchy in the precincts, based on traffic and transport needs. JWP used flood analysis to establish the need for bridges and culverts. Cardno established the need for a signalised intersection between Elara Boulevard and the North-South Collector Road.

However, we found that the studies did not establish the nexus for a small group of items - the extent of two bridge widths, the Stony Creek Rd and Grange Ave upgrades, and eight roundabouts. We therefore assessed these inclusions in more detail, as set out below.

3.3.2 Bridge widths

There are two bridges over Little Creek included in CP21 (ML4.0 and ML4.1 in Figure 3.1). These bridges cost \$12.5 million and \$12.1 million respectively, for a combined total of \$24.6 million.³⁵ The proposed bridges are 20.8m wide, and we assessed that narrower, lower cost bridges could still achieve satisfactory transport outcomes. We found that, assuming that safety concerns can be accommodated with a bridge width of 14m, reducing the widths to 14m would save an estimated \$8.0 million from the plan.

The width of 20.8m is based on AECOM's collector road cross section (Figure 3.4). BCC's Growth Centre's Development Control Plan (DCP) also provides for an 11m wide carriageway for collector roads within a 20m road reserve (Figure 3.3).³⁶ However, we do not consider a road profile is necessarily appropriate to guide a bridge's profile. As part of the consultation process, GLN Planning on behalf of Stockland noted it was difficult to understand how the width was warranted, as the full collector road profile does not have to continue for the length of the bridges.³⁷ GLN also noted that JWP, in its initial costings for its Flood Management Strategy Report,³⁸ assumed that both bridges would be 12m wide.

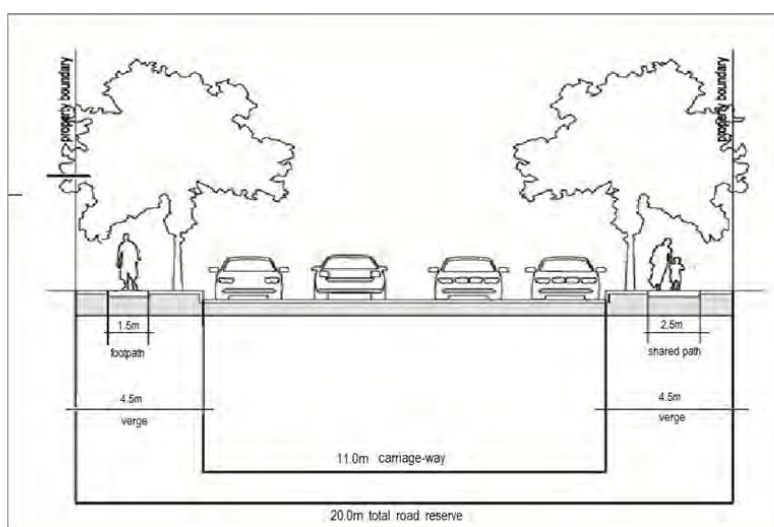
³⁵ CP21, p 75.

³⁶ DPE, *Blacktown City Council Growth Centre Precincts Development Control Plan*, September 2016 (BCC Growth Centres DCP), p 49.

³⁷ GLN Planning, *Draft Section 94 Contributions Plan No 21 – Marsden Park Submission on behalf of Stockland Residential Developments*, October 2016, p 10.

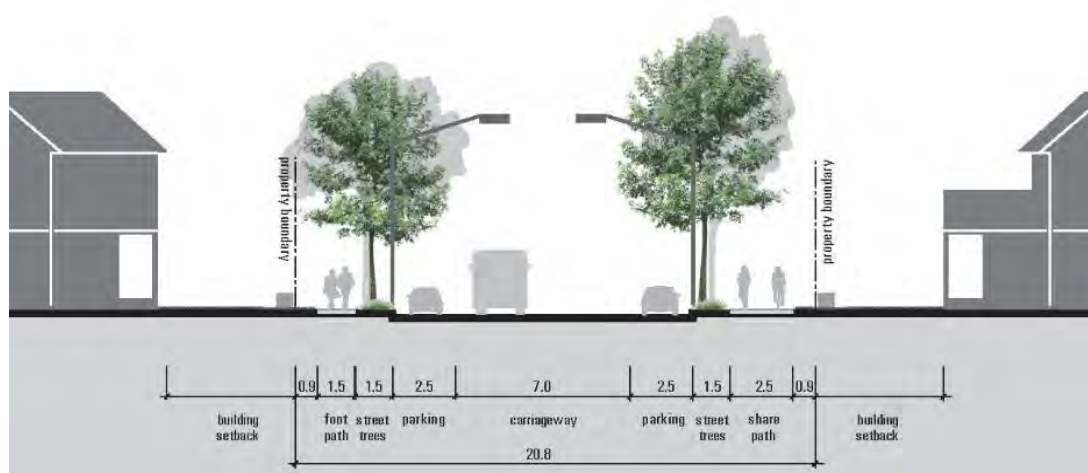
³⁸ JWP, *Marsden Park Residential Precinct – Post Exhibition Water Cycle & Flood Management Strategy Report*, July 2013, and CP21 Work Schedule, Bridge Section Tab.

Figure 3.3 Collector road profile in BCC Growth Centre DCP



Source: DPE, *Blacktown City Council Growth Centre Precincts Development Control Plan*, September 2016, p 49.

Figure 3.4 Collector road profile recommended by AECOM used in MPP



Source: AECOM, *Marsden Park Precinct Traffic and Transport Assessment*, April 2013, p 69.

BCC provided three reasons for maintaining the full width of the road reserve (20.8m) on bridges:

1. to provide traffic barriers and breakdown provisions.³⁹
2. to allow enough space for a shared path⁴⁰, and
3. to allow sufficient space for evacuation in the event of flooding.⁴¹

³⁹ BCC, Advice to IPART, 19 January 2017.

⁴⁰ CP21, p 23.

⁴¹ BCC, *Application for assessment of a section 94 development contributions plan*, December 2016, p 12 and BCC, Response to IPART, 6 March 2017.

We consider it is possible to design a bridge at a reduced width which addresses BCC's concerns, because:

1. JWP consultants originally recommended that bridge widths of 12m are likely to be sufficient for its needs.
2. In our assessment of the draft West Dapto contributions plan, transport consultants, ARRB, recommended Wollongong City Council adopt bridge widths of 14m for a two lane collector road similar to the roads proposed in the MPP.⁴² The bridges for which ARRB proposed a width of 14m were a part of the main flood access route for West Dapto, serving a larger population than the bridges in the MPP.⁴³
3. If BCC were to remove from the Collector Road Profile recommended by AECOM the setbacks, street trees, and a single parking lane, the bridges would be 13.5m wide, and still provide for one parking lane (which can act as a breakdown lane), a footpath and shared path.

In our draft report, we had proposed that the bridge widths be reduced to 14m, consistent with ARRB's recommendation for bridge widths in West Dapto, and consistent with providing space for shared paths and one parking lane.

In response to the draft report, BCC commented that reducing the width of the bridges, approximately 140m in length, increases the risk of conflicts and accidents.⁴⁴ It noted how:

... current road design standards recommend a minimum separation of 0.5m between the paths and kerb (1m desirable). This would increase widths to a minimum of 14.5m excluding the required traffic barriers which are typically in the order of 0.6-0.8m wide. Therefore the minimum width would be 16m typically.⁴⁵

It also noted how "SES concurrence would be required prior to accepting the cost adjustment as narrow bridges create safety issues" and that the council would potentially be liable if there was an incident on the bridge.

We acknowledge the council's concerns about safety and liability issues. However, we do not consider BCC has provided sufficient evidence that its safety concerns could not be accommodated with 14m bridge widths. We encourage the council to consult with the SES, and other relevant agencies as necessary to determine any special provisions for the bridges. This would include minimum path widths, the size and placement of traffic barriers and the need for a separate breakdown lane. If the outcome of such consultation indicates additional space is needed, then it would be appropriate to base bridge costs on the greater width.

⁴² ARRB, *Review of Transport Items in the Draft West Dapto Contributions Plan*, September 2016, p 34.

⁴³ West Dapto Section 94 Development Contributions Plan (2015), p 51.

⁴⁴ BCC, Response to IPART's Draft Report, 28 July 2017, p 1.

⁴⁵ BCC, Response to IPART's Draft Report, 28 July 2017, p 1.

We reconsidered the required widths in light of the council's comments and further advice from ARRB,⁴⁶ but maintain, at this stage, that the costs for the two bridges in CP21 should be based on widths of 14.0m. This width would appear to provide sufficient flexibility for a 7m carriageway and 7m for:

- ▼ one or more footpaths, noting that a path may only be required on one side of the bridge (1.5-3.0m),
- ▼ an additional parking lane if the SES considers this necessary (2.5m), and
- ▼ residual space for kerbside separation and barriers.

We estimate that the bridges would then cost \$8.4 million and \$8.2 million respectively,⁴⁷ which would reduce costs in CP21 by \$8.0 million. Any need for wider bridges for safety or flood evacuation purposes would increase the cost in CP21 and so should be advised at least by the SES, and other relevant agencies. Should such advice formally recommend wider bridges for ML4.0 or ML4.1, then it would be reasonable for the council to adjust the cost estimates accordingly.

3.3.3 Stony Creek Road upgrade

Stony Creek Road is a rural road located along the western border of the MPP (see MP4.1 and MP4.2 in Figure 3.1) and BCC proposes an upgrade to a collector road standard in CP21 to achieve “a satisfactory transport outcome” for the precinct.⁴⁸ We recommend excluding the road upgrade from CP21 on the basis that the road standard is sufficient to cater for the additional development in MPP, and the demand for an upgrade is generated from outside the precincts.

BCC noted that AECOM, which prepared the main transport supporting study, identified Stony Creek Road as serving a collector function in Appendix A of its report.⁴⁹ In its Post-Exhibition Planning Report, DPI found that AECOM had considered Stony Creek Road “carries sufficient traffic to be considered as a collector corridor independent of precinct development (greater than 2,000 to 3,000 vehicles per day)”.⁵⁰

The Department of Planning concluded, based on AECOM's analysis, that the upgrade to Stony Creek Road is not needed for Marsden Park:

Strategic modelling indicates at full development (beyond 2026), precinct traffic will account for an average of approximately 20% of total traffic along the Stony Creek Road corridor during peak periods. No additional upgrades are considered necessary to the surrounding road network as a result of precinct development.⁵¹

⁴⁶ ARRB, Email to IPART, 28 July 2017. ARRB advised that 3.5m either side of the carriageway allows for safety barriers to be installed on the 14m wide bridge centreline.

⁴⁷ We have otherwise assumed the same specifications and costs in BCC's cost estimates for the bridges.

⁴⁸ CP21, p 23.

⁴⁹ BCC, *Response from BCC to IPART Information Request*, March 2017, p 3.

⁵⁰ Former Department of Planning and Infrastructure (DPI), *Marsden Park Precinct Plan – Post-Exhibition Planning Report*, August 2013, p 32.

⁵¹ DPI, *Marsden Park Precinct Plan – Post-Exhibition Planning Report*, August 2013, pp 32-33.

The Growth Centre Commission Development Code assumes a collector road carries traffic loads of approximately 3,000 to 10,000 vehicles per day..⁵² In 2011, prior to development in the MPP, the Average Annual Daily Traffic for Stony Creek Road amounted to 5,876 vehicles, which falls within the range of use for a collector road..⁵³

In response to our draft report, the council noted that the AECOM analysis had suggested that “an average 26% of total traffic along Stony Creek Road is attributed to the Marsden Park Precinct (MPP) during peak traffic periods in 2026.” It considered that this established nexus for a quarter of the cost of the upgrade in CP21..⁵⁴

We acknowledge that some demand for the road will be created by the future development.

However, nexus requires the need for the upgrade of the road to a higher standard to arise from increased demand from the development. While the residents of Stony Creek Road might be beneficiaries of the upgrade, the residents are not creating the need for the upgrade. Therefore, based on the analysis of AECOM, we recommend excluding \$6.9 million for the construction of the road from CP21..⁵⁵ The council would need to instead fund the upgrade from alternative revenue sources.

3.3.4 Grange Avenue upgrade

Grange Avenue is a rural road located to the east of Richmond Road (MP5.1 in Figure 3.1), for which BCC in CP21 proposes an upgrade to collector road standard. The cost of the upgrade is \$4.0 million..⁵⁶ Despite an upgrade not being recommended by the supporting study, we found that BCC has established reasonable nexus with the additional information it has provided as part of our assessment.

In particular, BCC has established that:

- ▼ Grange Avenue will better serve as a through road to other precincts than the alternative Excelsior/Vine Street connection. It provides a direct link between Richmond Road and Bridge Street, which then links across to the Richmond Railway line.
- ▼ The Excelsior/Vine Street connection is also flood affected.
- ▼ It is impractical for developers to deliver the road as a condition of development consent.

In assessing the need for the full width upgrade, we also considered how the road services medium density development and the Blacktown DCP, which requires a carriageway for R3 (medium density) zoned land to be 11m, similar to a collector road standard. BCC also identified the need to change the gradients to achieve safe stopping distances..⁵⁷

⁵² GCC, *Growth Centres Development Code*, October 2006, p C-35.

⁵³ AECOM, *Marsden Park Precinct Traffic and Transport Assessment*, April 2013, p 10.

⁵⁴ BCC, Response to IPART's Draft Report, 28 July 2017, p 2.

⁵⁵ CP21, p 74.

⁵⁶ CP21, p 74.

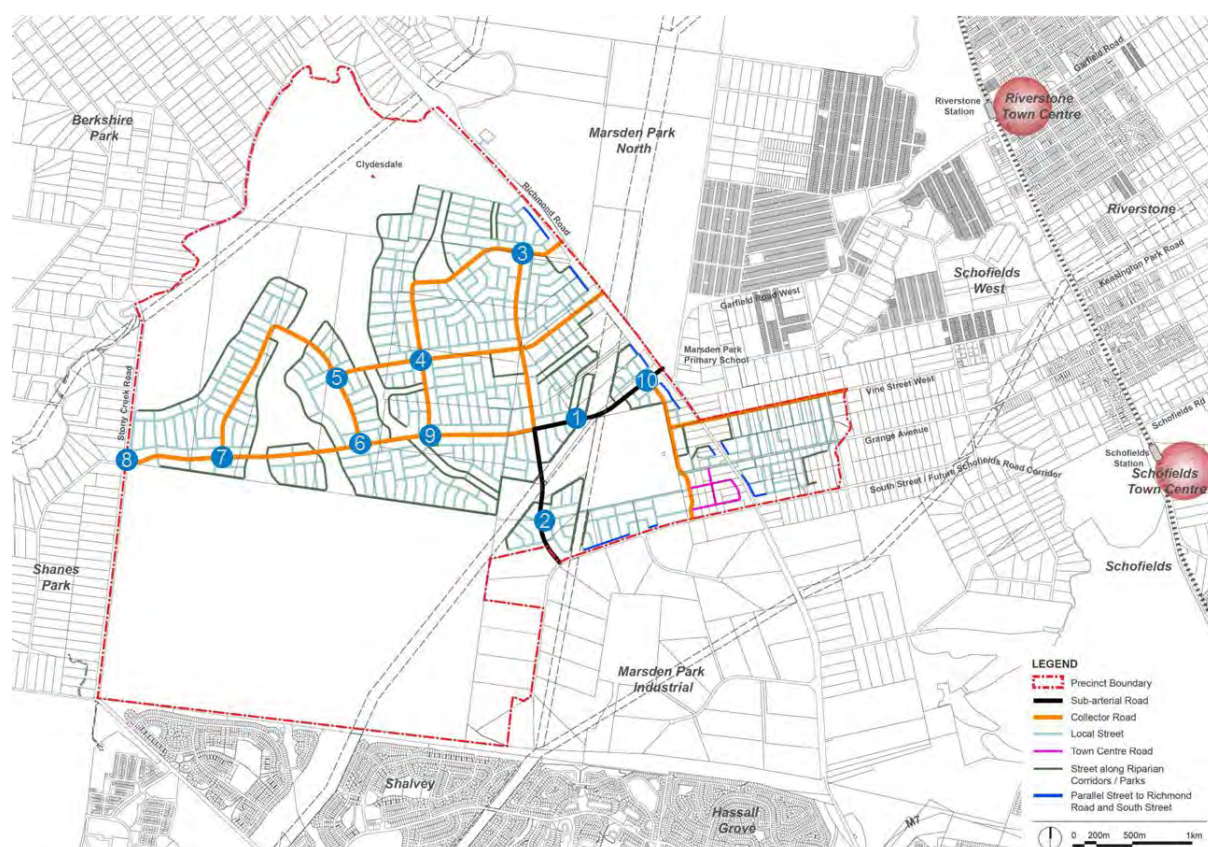
⁵⁷ BCC, *Response to Information Request*, March 2017, p 4, and as advised by BCC at site visit on 13 March 2017.

We consider these to be reasonable justifications for the nature and scope of the proposed Grange Avenue upgrade in CP21, and have not recommended any cost adjustment.

3.3.5 Roundabouts

BCC proposes to build ten roundabouts in the MPP (Figure 3.5), costing a total of \$2.8 million. We consider nexus has been established for all but one of the roundabouts ('roundabout 1'). We recommend that the cost of this roundabout (\$272,500) is removed from the plan.

Figure 3.5 Map of roundabouts in the MPP



Source: DPI, *Post-Exhibition Planning Report*, August 2013, p 31. Numbers introduced by IPART.

AECOM recommended one of the roundabouts ('roundabout 9') in its traffic assessment for the precincts. Therefore, we consider nexus has been established for this item. However, AECOM did not find that roundabouts were necessary at the other nine internal intersections.⁵⁸

⁵⁸ AECOM, *Traffic and Transport Assessment - Marsden Park Precinct*, April 2013, pp 29-33.

We reviewed each additional intersection proposed by BCC based on AECOM's standards for intersections. Based on our review, we considered that nexus was also established for a further roundabout ('roundabout 10'), because:

- ▼ it is an appropriate treatment for an intersection between a sub-arterial (Garfield Road West) and a collector road (Town Centre Collector Road).⁵⁹
- ▼ it is unlikely an alternative 'priority intersection' (eg, a T-junction with a give way sign) would be suitable for this location based on AECOM's analysis of the estimated traffic flows at the intersection⁶⁰, and
- ▼ a priority intersection might cause delays from the town centre collector road, since most vehicles would utilise this route to the town centre from the residential part of the MPP.

For the remaining eight intersections, we commissioned ARRB to conduct a review of the nexus with the new development in the precincts (Appendix E). ARRB determined roundabouts were an appropriate intersection control method for all intersections, except 'roundabout 1'.⁶¹ It considered the negative traffic management impact of roundabout 1 outweighed the road safety and amenity benefit, and that the roundabout was not considered an appropriate treatment at the designated location. On the basis of this advice, we recommend BCC remove the \$272,500 cost for roundabout 1 from CP21. In response to our draft report, the council agreed with removing this roundabout as alternative routes are available.⁶²

For the remaining roundabouts ARRB considered that a roundabout would provide a net benefit to the precinct, based on traffic management, safety and amenity.⁶³ This suggests that reasonable nexus exists for the proposed infrastructure.

Mini-roundabouts

ARRB further considered that a mini-roundabout design with a central island traversable by heavy vehicles could be sufficient for three roundabouts (3, 4, and 5), and reduce costs for these roundabouts.⁶⁴ However, BCC noted that under NSW road rules⁶⁵, a large vehicle is permitted to drive over the central island of a mini-roundabout but buses cannot cross the centre. To facilitate public transport options for the precinct, the council contended that mini-roundabouts should not be implemented at these intersections.⁶⁶

ARRB responded that under the road rules, a driver can drive over the central traffic island when "the central traffic island is designed to allow a vehicle of that kind to be driven over it", but keeps "to the left of the centre of the island".⁶⁷ ARRB considered that this would be

⁵⁹ ARRB, *Nexus Review of Roundabouts in the Marsden Park Contributions Plan*, April 2017, p 4.

⁶⁰ AECOM, *Traffic and Transport Assessment - Marsden Park Precinct*, April 2013, Appendix A, and RTA, *Traffic Signal Design Section 2 – Warrants*, February 2008, p 2-1. The traffic flows in each direction of the intersection appear to exceed the standard for a signalised intersection, which is a higher control intersection than a roundabout.

⁶¹ ARRB, *Nexus Review of Roundabouts in the Marsden Park Contributions Plan*, April 2017, p 13.

⁶² BCC, Response to IPART's Draft Report, 28 July 2017, p 2.

⁶³ ARRB, *Nexus Review of Roundabouts in the Marsden Park Contributions Plan*, April 2017, p 10.

⁶⁴ ARRB, *Nexus Review of Roundabouts in the Marsden Park Contributions Plan*, April 2017, p 13.

⁶⁵ NSW Road Rules 115 1(c) and 115(3).

⁶⁶ BCC, Response to IPART's Draft Report, 28 July 2017, p 2.

⁶⁷ Subrule 3 of NSW Road Rule 115.

possible for buses if the bus service is infrequent. The design outcome may look similar to a normal roundabout with an encroachment area for buses, but the size of the central island and the roundabout itself would be smaller..⁶⁸

Given the uncertainty in establishing the needs for buses at these intersections, we have not made a recommendation for mini-roundabouts. However, we acknowledge that smaller roundabouts could provide a more cost-effective solution for councils to consider when the intersections do not form part of busy public transport routes.

3.4 Criterion 3: Reasonable transport facility costs

In this section, we assess whether the proposed development contributions are based on a reasonable estimate of the cost of the proposed transport infrastructure.

We considered the approach in CP21 to cost the capital works and land requirements for transport infrastructure. We then considered the reasonableness of the cost estimates and the choice of indices to escalate cost estimates to current dollars.

IPART finding

3 The proposed cost of transport works is reasonable.

Recommendation

4 BCC amend the cost of the bridges once designs and detailed costings are prepared to reflect the narrower 14.0m bridges, or bridge widths advised in consultation with, at least, the SES.

We consider the costs to be reasonable because:

1. The costing methodology is based predominately on market rates for component parts of the transport infrastructure items.
2. The overall unit rates for the roadwork are comparable to other unit rates IPART has assessed as reasonable (eg, collector roads cost on average \$4,362/m in CP21 compared with \$5,541/m in West Dapto (assessed in 2016)).⁶⁹
3. Cost estimates for the same transport items are lower than in the previous version of CP21 (for Marsden Park Industrial Precinct) that IPART assessed as reasonable.

Our findings and recommendations are explained in more detail below.

⁶⁸ ARRB, Email to IPART, 11 August 2017.

⁶⁹ These costs exclude contingencies and are indexed to \$June 2016. Contingencies are also lower in CP21 (eg, 5% compared with 20% in West Dapto) (CP21 Appendices B and D; Wollongong City Council, *Draft West Dapto Contributions Plan*, Works Schedule pp 36-37; and IPART calculations).

3.4.1 BCC's costing methodology for transport works

BCC used an internal costing methodology based on its own schedule of rates supplemented by other industry information, as follows:

- ▼ preparing concept designs to generate a bill of quantities for the main works items
- ▼ pricing items using estimates based on the council's schedule of rates
- ▼ applying an industry rate, such as Rawlinsons, where works items were not included on the council's schedule of rates, and
- ▼ for facilities already constructed, using the actual cost for construction, indexed by Sydney All Groups CPI to the base date of the contribution..⁷⁰

IPART has previously found BCC's costing methodology to be reasonable because BCC uses actual rates to inform the unit rates in CP21..⁷¹ We consider that BCC's costing methodology in CP21 to cost its transport capital works is also reasonable.

3.4.2 BCC's unit rates compare favourably with other plans

The unit rates for collector roads in CP21 of \$4,362/m are below the IPART benchmark costs (\$5,803/m)..⁷² They also compare favourably with rates in the West Dapto plan that IPART recently assessed in 2016 (\$5,541/m) and other Blacktown contributions plans that IPART has assessed. In CP24 for the Schofields Precinct, the unit rate was \$4,984/m..⁷³

3.4.3 Comparison of costs with costs in previous version of CP21

The costs in the MPIP are lower in the current CP21 than the 2012 IPART-assessed reasonable costs. In the 2012 plan as adopted, the costs were \$26.9 million (\$June 2016)..⁷⁴ for the transport items in the MPIP and in the current plan the costs are \$26.0 million..⁷⁵ The \$0.9 million reduction in costs is due to lower unit costs (eg, for fill material and soil disposal) and reduced quantities for some items (eg, base and sub base material)..⁷⁶ This might reflect BCC implementing IPART's recommendations in relation to soil disposal in CP20, and BCC gaining additional information as a result of partially completing works.

⁷⁰ BCC, *Application for assessment of a section 94 development contributions plan*, December 2016, pp 17-19.

⁷¹ IPART, *Assessment of Blacktown City Council's Amended Section 94 Contributions Plan No 20*, March 2015, p 33.

⁷² IPART, *Local Infrastructure Benchmark Costs*, April 2014, Benchmark Datasheets Item 1.3, and IPART calculations. These costs exclude contingencies and are indexed to \$June 2016.

⁷³ These costs exclude contingencies and are indexed to \$June 2016. Contingencies are 5% in CP21 compared with 20% in West Dapto. (CP21 Appendices B and D; Wollongong City Council, *Draft West Dapto Contributions Plan*, Works Schedule, March 2016, pp 36-37; CP24, Traffic Transport Schedules, May 2013, MISC Tab, and IPART calculations).

⁷⁴ CP21-2012, p 56 and IPART calculations.

⁷⁵ CP21, Appendix B2, p 57.

⁷⁶ CP21 Traffic Transport Schedule – MPIP – 2016 Adoption, R1 Cost Estimate Tab and WorleyParsons, *Review of Blacktown City Council Contributions Plan – Marsden Park Industrial Precinct – CP21: Stormwater and Transport*, 1 August 2012.

3.4.4 The cost of bridges is reasonable

Two bridges over Little Creek are included in CP21 (ML4.0 and ML4.1 in Figure 3.1). In section 3.3.2, we recommend the width of each bridge be reduced to 14.0m (subject to consultation with relevant agencies), reducing the costs to \$8.7 million and \$8.5 million, respectively.

The costing of our previous recommendation to reduce the width was based on applying BCC's square metre rate for bridge construction. We consider this to be a reasonable approach. However, we note that BCC's per square metre cost of \$4,222/m² for the two bridges (including all construction costs, design fees and contingencies) is about 30% higher than JWP's proposed rate of \$3,304/m². Unlike with stormwater items, we do not have detailed costings for the cost of bridges from JWP, to assess their scope and reasonableness.

We recognise there is difficulty in benchmarking the cost of bridges, because there is a lack of technical uniformity. To overcome this, the IPART benchmark report applied a reference cost for bridges, which ranged from \$5,400 and \$7,613/m².⁷⁷ The reference bridges had a much shorter span than the bridges proposed in the plan.⁷⁸ This might result in the square metre rate for bridges in the benchmark report appearing to be high when compared with longer bridges.

We consider the proposed costs of bridges in CP21 fall within an acceptable range for the preliminary costings stage. These costs would need to be refined once the designs are finalised.

3.5 Criterion 3: Reasonable transport land costs

In this section we outline our assessment of the overall costing methodology for land costs, relevant to transport and other infrastructure categories. We discuss our assessment of the expected acquisition rates applied to individual zonings including constrained land, and then assess the application of the rates to the land which needs to be acquired for transport infrastructure.

IPART findings

- 4 The original proposed land acquisition cost for all infrastructure in CP21 (\$466,584,755) was based on unclear assumptions about the underlying zoning rates and the proportion of constrained and unconstrained land to be acquired.
- 5 The revised land acquisition cost provided by BCC during our assessment (\$467,537,755) is more transparent and based on valuations of individual lots to be acquired, informed by advice on the average underlying zoning rates by an external valuer, and more reasonable assumptions about the proportions of the lots which are constrained and unconstrained.

⁷⁷ IPART, *Local Infrastructure Benchmark Datasheets*, April 2014, R.1.

⁷⁸ The bridges in the plan have spans of 142 m and 138 m, whereas the reference items have spans of 19 m and 34 m.

- 6 Consistent with Finding 5, the revised land acquisition cost for transport infrastructure is reasonable, except:
- the cost estimate for road reserve ‘R1’, which assumes that all land is unconstrained (with underlying zoning areas of B7, R3 HOB 16, IN1 and IN2) when 80% of the land is currently constrained.

Recommendation

- 5 BCC increase the proposed cost of acquiring land for transport purposes in CP21 by \$23,519,256 to \$79,431,876, reflecting BCC’s revised cost estimates (an increase of \$30,838,000) and an adjusted valuation for road reserve ‘R1’ to assume that 80% of the land is constrained (a reduction of \$7,318,744).

3.5.1 Costing methodology for land costs

The cost of land in CP21 is based on two costing approaches for land, applied consistently for each infrastructure category:

1. For land already acquired, the actual amount for which the land was acquired, indexed by CPI is adopted. We consider this approach to be reasonable.
2. For land yet to be acquired, BCC advised it prepared the cost estimates using an ‘averaging methodology’, but did not provide the supporting information demonstrating how average underlying zoning rates and assumptions about land constraints had been applied to individual lots.⁷⁹ We considered that the information provided was insufficient to assess the reasonableness of the proposed land acquisition costs in the plan.

We requested that BCC provide additional information about the underlying zoning rates and assumptions about land constraints applying to individual lots.⁸⁰ Subsequently, BCC engaged an external valuer to provide it with advice about the average rates for different underlying zonings and constrained land. BCC then provided us with additional information including:

- ▼ an estimate of the average rates for each zoning provided by the external valuer (MJ Davis)
- ▼ the anticipated underlying zoning for each parcel of land and which infrastructure it will accommodate, and
- ▼ the area of any encumbrance (or constraint) applicable to individual parcels of land.⁸¹

BCC also revised its land acquisition estimates based on the valuer’s rates for each underlying zoning applied to the individual land parcels (Table 3.4). It also considered the development potential of any constrained land and whether a higher rate than the constrained rate could be expected to be paid. We found this to be a reasonable approach, and it provided greater rigour to land costs because the likely valuation for each parcel to be acquired and the underlying assumptions could be assessed in detail.

⁷⁹ BCC, *Application for assessment of a section 94 development contributions plan*, December 2016, p 18.

⁸⁰ IPART, Email to BCC, 31 March 2017.

⁸¹ BCC, Response to IPART, 8 June 2017.

Table 3.4 Cost of land to be acquired in CP21 (\$June 2016)

Infrastructure Category	Proposed cost in CP21	BCC revised cost
Transport	55,912,620	86,750,620
Stormwater	243,211,749	235,994,749
Open space	148,836,865	115,443,865
Community services ^a	18,623,521	29,348,521
Total	466,584,755	467,537,755

^a Community services includes community facilities and combined precinct facilities.

Source: CP21 Works Schedules, Appendix H; and Additional supporting information provided by BCC, 8 June 2017.

In reviewing the revised land costs, we next assessed:

1. The reasonableness of the rates for underlying zonings and constrained land recommended by the external valuer to BCC, which applies to all infrastructure categories.
2. The reasonableness of the application of the rates to specific parcels of land, by infrastructure category, using:
 - North West Growth Centre land zoning maps.⁸²
 - LPI easement and flood maps,⁸³ and
 - detailed constrained land maps.⁸⁴

Our assessment of the application of the rates to land for transport purposes is in the section below; and for other categories of infrastructure, in the relevant chapters (section 4.5 for stormwater, section 5.4 for open space, and section 6.3 for community services).

3.5.2 Underlying zoning and constrained rates for land to be acquired are reasonable

BCC engaged MJ Davis, registered valuers, who reported in May 2017 to provide average valuation rates of each underlying zoning, including constrained land. MJ Davis provided separate average rates for the following land uses:

- ▼ **Residential:** R2, R3 HOB 14, R3 HOB 16, R3 HOB 21
- ▼ **Environmental:** E2⁸⁵
- ▼ **Industrial:** IN1, IN2
- ▼ **Business:** B2 HOB 14, B2 HOB 28, B5'F', B7, and
- ▼ **Constrained.**⁸⁶

⁸² DPI, North West Growth Centre Land Zoning Map - Sheet LZN-005 and LZN-002, September 2013.

⁸³ Additional supporting information provided by BCC, 8 June 2017.

⁸⁴ Additional supporting information provided by BCC, 16 June 2017.

⁸⁵ This rate (effectively the constrained rate) was also applied to a small proportion of land zoned E3.

⁸⁶ MJ Davis Valuations Pty Ltd, *Valuation report – Periodic Review of Contributions Plan No. 21 – Marsden Park – Average Estimated Land Values as at 16 August 2016*, May 2017 (MJ Davis Valuation Report).

We consider that this approach, in principle, is reasonable as it relies on recent, independent valuation advice and reflects the underlying zonings in the precincts. We also reviewed MJ Davis' report and found the recommended rates to be internally consistent and broadly reflective of recent sales in neighbouring precincts in the North West Priority Growth Area.

We acknowledge that the rates applied, with a base date of 16 August 2016, represent a significant increase in land values in the precincts in the preceding few years. However, significant increases in rates are broadly consistent with the Valuer General reporting a 49.2% increase in land values in the Blacktown LGA from July 2014 to July 2016.⁸⁷

In its advice to BCC, MJ Davis also provided a rationale for its valuations, based on strong market conditions, as follows:

The take up of development land in the North West Growth Centre (NWGC) precincts in general had been rapid over the last 24 months in particular, although the market here, along with most of Sydney, experienced a slowing in late 2015 which continued until early 2016. The 2015 market correction was brought about by macro prudential lending restrictions targeting investors and overseas buyers, plus a tightening of credit availability had impacted demand.

From Q2 of 2016 however, confidence had returned to much of the market with increases in both interest and pricing structures noted over the following months.⁸⁸

3.5.3 Application of the rates to land to be acquired for transport purposes

The original proposed land costs for transport in CP21 were \$55.91 million (Table 3.2). These costs reflected an average rate of \$353/m² for transport land in the MPP and \$241/m² for transport land in the MPIP.

In response to IPART's request for additional land cost information, BCC's revised acquisition estimates for transport land total \$78.2 million.^{89,90} This reflects average rates of \$582/m² for the MPP, and \$399/m² for the MPIP. The increase in the cost estimates is due to the higher underlying rates recommended by the external valuer, which offset assumptions about a higher proportion of land being constrained (and therefore of lower cost) in the revisions.

Table 3.5 provides an overview of the land areas for transport infrastructure allocated as constrained or another unconstrained zoning.

⁸⁷ Crown Valuation Services, *Final Report Base Date 1st July 2016 – District of Blacktown (214) - Blacktown Contract Area*, November 2016, p 2.

⁸⁸ MJ Davis Valuation Report, p 36.

⁸⁹ This excludes \$8.5 million in the cost of land already acquired by BCC.

⁹⁰ BCC, Response to IPART, 8 June 2017.

Table 3.5 Area of land in each zoning category in BCC's revised land cost estimates for transport in CP21

Underlying Zoning	Area (ha)	Percentage
Constrained	2.0372	13%
R2	1.2633	8%
R3 HOB 14	0.6065	4%
R3 HOB 16	0.0038	0%
R3 HOB 21	4.7044	31%
IN1	1.9626	13%
IN2	1.6183	11%
B2 HOB 28	0.8981	6%
B7	2.1389	14%
TOTAL	15.2331	

Source: Additional supporting information provided by BCC, 8 June 2017.

We consider the proposed land costs to be reasonable with the exception of the allocation of land for road reserve 'R1' in MPIP, where we consider that BCC has underestimated the portion allocated as constrained. The acquisition of the parcel for R1 is co-located with the acquisition of stormwater item M1.2.⁹¹ The acquisition area for R1 and M1.2 is illustrated in Figure 3.6, where the blue provides an overlay of flood affected areas. BCC applied an unconstrained rate to all of the land area in its acquisition estimates for transport land.

Figure 9 Constraints in land for road reserve 'R1'



Data source: Additional supporting information provided by BCC, 16 June 2017.

We consider a constrained rate should apply to reflect the portion of the land that is flood affected. We recognise that a portion of the land may have development potential, because BCC states that the road that will be built needs to be above the floodplain. However, there would be a cost incurred in making the land that is currently flood affected developable, relative to unconstrained land, and this cost would be reflected in a lower price for the land.

⁹¹ Stormwater Item M1.2 is discussed in section 4.5.1.

In response to our draft report, BCC disagreed with the broad approach of applying 80% of the R1 road reserve as being constrained.⁹² It suggested measuring constrained and unconstrained area in each property forming part of the reserve and applying rates individually to those portions, but does not yet have that information available.

The council also obtained further advice from MJ Davis who stated that it is likely, depending on the works required, that the resulting land value would fall somewhere between the appropriate flood free development value and the constrained land value. It also noted that one option could be to apply a midpoint between the two valuation rates. However, it further qualified that with respect to land with an underlying residential zoning (including R3, as is the underlying zoning for a section of the road reserve) unless the remediation work costing information was provided upfront, it would still apply the constrained rate to that land area.⁹³

We consider that in the absence of any information about the extent of work required to make the land developable, any alternative rate, including a midpoint, is arbitrary. The averaging methodology has been used across all land to be acquired by the council and it would be inconsistent to adjust the approach for certain properties only. For some properties where there is a mix of constrained and unconstrained land, the rates paid by the council might be closer to the underlying zoning rate (and therefore the higher land value rate), while in others, the rate might be closer to the lower, constrained rate. The averaging approach helps to smooth these differences over the total land acquisition costs in the plan.

For these reasons, we consider that the lower constrained rate should apply to 80% of the acquisition area of R1. At this point, this area is considered to be constrained land. This would effectively discount the overall cost of the land from the average underlying zoning rate (B7, R3 HOB 16, IN1 and IN2), and reduce land costs by \$7.3 million relative to BCC's proposed revised land costs.

3.6 Criterion 5: Apportionment

Apportionment refers to the division of the costs equitably between all those who create the need for the infrastructure, including any existing population. While nexus is about establishing a relationship between the development and demand for infrastructure, apportionment is about quantifying the extent of the relationship by ensuring that costs are shared appropriately between and within developments. Full cost recovery from contributions should only occur where the infrastructure is provided to meet the demand arising from new development.⁹⁴

⁹² BCC, Response to IPART's Draft Report, 28 July 2017, p 3.

⁹³ MJ Davis, *Periodic Review of Contributions Plan No. 21 – Marsden Park – Additional Queries*, 21 June 2017, pp 5-6.

⁹⁴ Practice Note, p 3.

In assessing apportionment of transport costs in CP21, we have taken into account:

- ▼ the demand for infrastructure in the plan, arising from the expected development inside and outside the MPP and MPIP precincts
- ▼ the capacity of existing infrastructure and the needs of the existing population, and
- ▼ the demand generated by different types of development that will occur in the precincts.

We found BCC's approach in apportioning the transport costs to residential dwellings in the MPP only (rather than in the MPIP) to be reasonable. However, we identified two other issues which concern the apportionment of collector road costs across the precincts, and the apportionment of costs by land area.

IPART finding

- 7 The apportionment of transport infrastructure is reasonable except for:
- The apportionment of collector roads across all residential development in the MPP, which creates an inequitable distribution of costs when other developers are also providing collector roads as conditions of consent.
 - The apportionment of transport costs to residential development by area when population better reflects the demand created for transport infrastructure.

Recommendations

- 6 To make contributions towards collector roads more equitable across the MPP, BCC apportion the cost of the Grange Avenue upgrade to a new traffic catchment area only, bounded by Richmond Road to the west, Vine Street West to the north, South Street to the south and the Environmental Conservation area to the east.
- 7 BCC apportion transport costs to residential development by population (per person) instead of area (per hectare of net developable area) in its next review of CP21.

3.6.1 Apportionment of transport costs in MPP and MPIP

BCC apportions transport costs across the MPP and the MPIP separately.⁹⁵ Stony Creek Road is the only item apportioned across multiple precincts.⁹⁶

BCC does not apportion any of the costs of transport infrastructure to residential dwellings located in the MPIP. This is because BCC does not consider that nexus exists for traffic management facilities for residential zones in the MPIP, as the roads are provided primarily to service the industrial development.⁹⁷ The roads in the MPIP are internal to the precinct, and it is unlikely the residents will use them, except to access commercial development. In these circumstances, demand is created by the commercial and industrial development, not the other development.

⁹⁵ The maps in Figure 3.1 and Figure 3.2 show the items apportioned to the MPP and the MPIP respectively.

⁹⁶ IPART recommended the cost of Stony Creek Road is removed for insufficient nexus as explained in section 3.3.3.

⁹⁷ BCC, Response to IPART, 6 March 2017.

In addition, only around 600m of road would likely be used by the MPIP residents to access the Aquatic Centre and Reserve 1006. However, South Street and Richmond Road are likely to be the roads most frequently accessed for commuting purposes. The developers in these areas pay for collector roads within each of the developments through conditions of consent.

For these reasons, we found it reasonable that the residential development in MPIP is not apportioned transport costs in CP21.

3.6.2 Apportionment of collector road costs

We consider the proposed apportionment of collector road costs in CP21 is inequitable. Developers that have delivered collector roads through development consent conditions must also contribute to the cost of other collector roads which do not service their development. Developers do not receive a contributions offset for roads delivered through conditions of consent that are not included in the contributions plan. We recommend resolving this inequity by apportioning Grange Avenue to a new catchment area west of Richmond Rd only.

BCC has required collector roads in Marsden Park to be delivered by developers through conditions of consent in most instances. This not only helps to expedite the delivery of the road infrastructure; it also significantly reduces the costs in CP21.

We estimate that the cost of the collector roads not included in the plan is approximately \$191 million.⁹⁸ Therefore, developers are already paying on average around \$19,200 per lot to provide collector roads through conditions of consent.

There is \$18.8 million worth of collector roads in the MPP:

- ▼ MP2.1 – Town Centre Collector Road (\$3.2 million)
- ▼ MP2.2 – Collector Road from Pius Lane to Garfield Road West Extension (\$2.4 million)
- ▼ MP3.1 – Pius Lane (\$653,000)
- ▼ MP4.1, MP4.2 – Stony Creek Road (\$6.9 million).⁹⁹
- ▼ MP5.1 – Grange Avenue (\$4.0 million)
- ▼ Residual roads over culverts or fronting undevelopable land (\$1.7 million).¹⁰⁰

MP2.1, MP2.2 and MP3.1 provide access to open space, the town centre, and the aquatic centre. Therefore, they provide access to residents across the MPP, and it is reasonable to apportion these costs across the entire MPP. It is also reasonable to apportion the costs of the residual roads to all development in the MPP.

Grange Avenue provides more limited access, serving predominately development to the west of Richmond Road, encompassing the area of the Bells Creek stormwater catchment.

⁹⁸ This assumes BCC's new collector road rate of \$4,160/m and that collector roads not included in the plan span around 13,000m (CP21 and IPART calculations).

⁹⁹ We have recommended that the cost of Stony Creek Road be excluded from CP21 on the basis that nexus has not been established for the upgrade (Section 3.3.3).

¹⁰⁰ CP21, Appendix D.

Our draft report recommended that it would be more equitable to apportion the cost of Grange Avenue to the Bells Creek stormwater catchment only. This would increase the contribution rate per lot in that catchment by around \$6,700. For the other catchments, contribution rates would decrease by approximately \$400 per lot, noting they already contribute approximately \$19,200 per lot to deliver roads through conditions of consent, for which they do not receive an offset in contributions.

The council responded that it would be more equitable to include all development west of Richmond Road in a new traffic catchment area. We agree with the council that this would better represent the demand from the new development for Grange Avenue. We had recommended the Bells Creek stormwater catchment as the apportionment area in the interests of simplicity given that CP21 already has multiple catchments (for the apportionment of stormwater costs). However, we acknowledge that under the council's approach, there would still only be two catchments for transport cost apportionment in MPP.

We therefore recommend that the cost of Grange Avenue be apportioned to development in a new traffic catchment area west of Richmond Road only. The council estimated that this would result in contributions of \$19,097 per lot for those developments compared with a contribution for other development east of Richmond Road of \$12,710 per lot.¹⁰¹ This is a similar variation in rates (\$6,387) as estimated for our draft recommendation.

The council also noted that apportioning other residual roadwork items to the relative traffic catchments only would increase the contributions in the catchment west of Richmond Road compared with the other catchment. We do not recommend this approach since it is reasonable for this residual work, which is proposed in both catchments and cannot be practically delivered by developers, to be apportioned across all development.

3.6.3 Apportionment of transport costs to residential development

BCC apportions transport costs to both residential and non-residential development in CP21 on an area ('per hectare of Net Developable Area (NDA')') basis.

IPART recommended in its review of BCC's amended CP20 in 2015 that the council considers using the 'per person' approach for apportionment of transport costs to residential development instead of the 'per hectare of NDA' approach, which it also uses to apportion those costs to non-residential development (Box 3.1).¹⁰²

In previous reviews we have expressed a preference, on balance, for the population-based approach because it better reflects the demand created by residential development in the precincts.

¹⁰¹ BCC, Response to IPART's Draft Report, 28 July 2017, p 3. The estimates for contributions per lot are based on the assumption of 15 lots per hectare. They include the council's revised land acquisition estimates, noting the original MPP base rate for transport infrastructure in CP21 was \$10,771 per lot.

¹⁰² IPART, *Assessment of Blacktown City Council's Amended Section 94 Contributions Plan No 20*, March 2015, p 46.

Box 3.1 IPART's previous approach to transport apportionment

For **non-residential development**, it is common practice for councils to apportion the cost of transport infrastructure using the **per hectare of NDA approach**, based on non-residential development's share of total NDA in the precinct. This is because the total NDA will not change compared with the development yields for residential and non-residential developments, which could be revised as development progresses. It is also relatively more difficult to forecast future demand from development using the vehicle-trip approach, when the actual employee or gross floor area yield could vary significantly, and sufficient data may be unavailable.

For **residential development**, councils should consider apportioning the cost of transport infrastructure using the **per person approach**, based on the residential development's share of total NDA in the precinct. We consider that this approach is more equitable than the area-based approach because it accounts for variations in demand from different densities. We also note that this approach is more accurate to forecast than non-residential development because developers will generally maximise residential yield in accordance with the zoning limits.

Councils can also use the **per vehicle trip approach** for residential development. Whilst this approach ignores other modes of transport, we acknowledge that vehicle travel is the predominant mode of travel in the North West and South West Priority Growth Areas and the principal determinant of the scale of roads and intersection works to be provided. This approach is also more equitable because it is more representative of road demand generated by residential households. Nevertheless, we consider that this approach should only be applied where there is relevant information eg, there is information and advice in the supporting transport study about the vehicle trip generation rates and how they can be used to apportion the costs. This is because this approach is largely assumption-based and its application will depend on the availability and appropriateness of relevant trip generation information for the precinct.

Source: IPART, *Assessment of Blacktown City Council's Amended Section 94 Contributions Plan No 20*, March 2015.

Table 3.6 shows that in CP21 a 'per hectare' approach results in higher contributions for lower density development and lower contributions for higher density development, which is inconsistent with our view that population is a driver for transport demand. Contribution rates are 18% to 41% higher for low density development in the MPP (12.5 and 15 dwellings/ha) using the 'per hectare' approach, as opposed to the 'per person approach'. At higher densities (25 and 35 dwellings/ha) the 'per hectare' approach results in contribution rates that are 24% to 46% lower than with the 'per person approach'. Applying the 'per hectare' approach, the higher (35 dwelling/ha) density development pays 6% of the contributions for roads, whereas it accounts for 12% of the dwellings and population in the precinct. Given the difference between the contribution rates and because population is a key driver of transport demand, we recommend that BCC reapportion transport costs to residential development in CP21 on a per person basis.

In response to our draft report, BCC agreed to this approach but requested that, for practical reasons, it be permitted to consider this approach in its next review of CP21..¹⁰³

¹⁰³ BCC, Response to IPART's Draft Report, 28 July 2017, p 4.

Table 3.6 Comparison of BCC proposed and potential transport contribution rates in MPP (per hectare NDA vs per person methodology) (\$June 2016)

Density (dwelling/ha)	12.5	15	25	35
Occupancy per dwelling	2.9	2.9	2.7	2.7
Contribution rate using per hectare approach	\$12,925	\$10,776	\$6,463	\$4,621
Contribution rate using per person approach	\$9,154	\$9,154	\$8,523	\$8,523
Ratio per hectare and per person	0.71	0.85	1.32	1.84

Source: CP21 Works Schedules, IPART calculations.

4 Assessment of CP21 – stormwater

This chapter provides the context for stormwater management in the precincts and summarises our assessment of the stormwater management infrastructure in CP21 against the criteria in the Practice Note.

Our findings and recommendations are summarised in Table 4.1. Overall, we recommend total savings of \$108.4 million, which would reduce stormwater costs by 22.4%.

Table 4.1 Summary of IPART's assessment of stormwater infrastructure in CP21

Criterion	Finding	Recommendation	Cost adjustment (\$June 2016)
Essential Works List	All items are on the Essential Works List.		
Nexus	Nexus has been established for all items, including, on balance, the items to achieve Little Creek 'ideal' stormwater outcomes.	DPE review the Practice Note to clarify status and interpretation of stormwater management objectives	
		For the South Creek catchment, the Minister require stormwater management planning to occur at the catchment/regional level	
		Amend CP21 to implement any future South Creek catchment findings on stormwater	
Reasonable costs	Cost estimates for stormwater infrastructure are largely too high such that:		
		Stormwater basin costs should be reduced	-\$78.1m
		Raingardens costs should be reduced	-\$3.2m
		Channels costs should be reduced	-\$14.2m
		Culvert costs should be reviewed	
	BCC's revised land costs are reasonable except for:	The cost of land for channels L3.6 and M1.2 should be adjusted to reflect the extent of the land's constraints	-\$5.7m
		BCC should adopt its revised land costs	-\$7.3m
Apportionment	The apportionment of stormwater costs is reasonable except:	The costs in MPIP Little Creek stormwater quality catchment need to be reapportioned to more fairly distribute catchment costs	
		All stormwater quality contribution rates should be included in CP21 to distinguish different rates for low density residential and other developable land	
Total IPART recommended cost adjustment			-\$108.4m

4.1 Stormwater management in the MPIP and MPP

CP21 includes \$484.7 million for stormwater management works, comprising \$243.2 million for land and \$241.5 million for stormwater works. BCC explains the need for stormwater quantity works to manage the increase in stormwater runoff from the greenfield development as follows:

Development produces hard impervious areas and this results in increased stormwater runoff and greater flows occurring in the natural drainage system. If these flows are not controlled by an appropriate drainage system, inundation from floodwaters may occur both within the area being developed and further downstream. The increased flows can also result in damage to downstream watercourses through increased erosion and bank instability..¹⁰⁴

Urban development also generates increased pollutants that enter the stormwater system. These pollutants need to be managed through stormwater quality works to protect the receiving waterways.

4.2 Criterion 1: Essential Works List

We are required to assess whether the stormwater infrastructure included in CP21 is on the Essential Works List (EWL) outlined in the Practice Note (see Appendix B)..¹⁰⁵

IPART finding

8 All stormwater infrastructure items in CP21 are on the Essential Works List.

Table 4.2 summaries our assessment of stormwater infrastructure in the plan against the EWL. We found that all of the stormwater infrastructure items in the plan are on the EWL.

Table 4.2 IPART's assessment of stormwater infrastructure in CP21 against the EWL

Items on the EWL
Detention basins
Stormwater channels
Culverts
Drainage lines
Raingardens (stand alone and located within detention basins)
Gross pollutant traps

4.3 Criterion 2: Nexus

In assessing the nexus of stormwater items in CP21, we considered whether the infrastructure is sufficient to meet, but not exceed, the demand arising from the development of the MPIP and MPP.

¹⁰⁴ CP21, p 10.

¹⁰⁵ Department of Planning & Infrastructure, *Revised Local Development Contributions Practice Note For the assessment of Local Contributions Plans by IPART*, February 2014.

We found that nexus was established for the infrastructure through the supporting technical studies. Where there was a deviation from the technical studies, BCC has made a reasonable case to include the infrastructure in CP21.

We also recommend that for the South Creek catchment, which includes the Sydney North West and South West Priority Growth Areas, the Minister should require stormwater management planning to occur at the whole of catchment/regional level to achieve more efficient management outcomes. We note that BCC is currently undertaking a review of the relevant stormwater management needs of the South Creek catchment and that CP21 will need to be amended to implement any resultant variations to the proposed infrastructure and associated land acquisition needs in the MPP and MPIP.

IPART findings

- 9 There is reasonable nexus between the stormwater items in CP21 and the expected development in the MPIP and MPP, including:
 - on balance, reasonable nexus between the proposed stormwater management strategy for the MPIP Little Creek catchment to achieve ideal stormwater outcomes, and the expected development in this part of the precinct.
- 10 The water quality and environmental flow targets, established by the (former) Department of Environment, Climate Change and Water (DECCW) to inform stormwater infrastructure needs for new development, do not specify the circumstances in which the different stormwater objectives (“stormwater management objective” or the “ideal stormwater outcome”) should apply.

Recommendation

- 8 DPE review and clarify in the Practice Note the relevant stormwater management objectives that apply to stormwater works funded through contributions plans so that it is clear in which circumstances each stormwater objective applies.

Supporting studies to establish nexus for stormwater infrastructure

BCC provided the supporting stormwater studies presented in Table 4.3 with its application for assessment of CP21 to establish nexus for the proposed infrastructure.

Table 4.3 Technical studies – stormwater management in CP21

Author	Title	Date
GHD Pty Ltd	<i>Draft Report for Marsden Park Industrial Precinct – Water Cycle Management Assessment: Flooding, Stormwater and Water Sensitive Urban Design</i>	July 2009
J Wyndham Prince	<i>Marsden Park Industrial Precinct Bells Creek Corridor Water Cycle Management Strategy</i>	January 2011
J Wyndham Prince	<i>Marsden Park Industrial Precinct Post Exhibition Water Cycle Management Strategy Report Including Consideration of Climate Change Impacts</i>	February 2011
J Wyndham Prince	<i>Marsden Park Residential Precinct – Post Exhibition Water Cycle and Flood Management Strategy Report</i>	July 2013
Bligh Tanner Pty Ltd	<i>Protecting Little Creek: Marsden Park Industrial Precinct Little Creek Catchment Alternate Stormwater Management Strategy</i>	June 2015
Blacktown City Council	<i>Draft Concept Drainage Design Report CP21 Basins L1.1, L2.2 & L3.2 to protect The Little Creek Tributary</i>	May 2016

In response to our queries during the assessment process, BCC also provided the following further reference material to help establish nexus for the proposed stormwater infrastructure:

- ▼ Office of Environment and Heritage (OEH), Alternate stormwater management strategy for the Little Creek catchment in the Marsden Park Industrial Precinct, letter from OEH to BCC, 29 February 2016.
- ▼ Development Consent SSD 6954, IKEA Distribution Services Australia Pty Ltd, 3 May 2016.

Our assessment of the nexus of stormwater infrastructure in CP21 is outlined below.

4.3.1 Summary of our assessment

The supporting technical studies and BCC's explanations for deviations from these studies establish the need for most stormwater infrastructure to manage the impacts of development in CP21. IPART assessed most of the deviations for stormwater works in the MPIP as part of its assessment of CP21 in 2012. (This chapter refers to the plans as CP21-2012 and CP21-2016.) In this review we have assessed only the deviations that BCC has proposed since 2012.

Table 4.4 outlines the proposed deviations in stormwater works from the supporting technical studies since 2012, BCC's explanation for these deviations and our assessment of them. In general, we found that nexus is established for all proposed deviations.

Table 4.4 Summary of IPART assessment of CP21 stormwater works that deviate from technical studies

Deviating stormwater work	BCC explanation of deviation	IPART assessment
Marsden Park Industrial Precinct		
Raingardens B3.3, B5.3, B5.4	The previous draft CP21 included a raingarden east of Richmond Rd in MPIP Bells Creek catchment, which IPART recommended be removed because it was not required to meet stormwater quality standards. BCC completed additional water quality modelling and found that by including 360m ² of treatment east of Richmond Rd, it could reduce the size of B3.3 (west of Richmond Rd) by 4,200m ² , with a major cost saving.	With an overall reduction in filter size for raingardens in this area of the MPIP Bells Creek catchment from the size IPART previously assessed as reasonable, we consider that nexus for these deviations is established.
Basins L1.1, L2.2, L3.2 Flow diversion culvert L4.1 Raingarden L4.2	A flow diversion system in MPIP Little Creek catchment is the most feasible solution to achieve ideal stormwater outcomes for the adjoining conservation area and intact chain of ponds tributary. This strategy approximately doubles the design storage for three detention basins.	On balance, nexus is established for the proposed stormwater management strategy in the MPIP Little Creek catchment. This assessment is explained further at section 4.3.2.
Marsden Park Precinct		
Culverts MM3.11, MM3.13	A channel proposed by JWP is replaced with culverts and overland flow path. JWP's proposal would have resulted in relatively short sections of open channel between culverts located at a high pedestrian area at the proposed town centre.	While the cost of this deviation is high (\$2.43m), ^a we consider that BCC's explanation is reasonable and nexus is established.
Raingardens ML3.0, MM2.1, MM3.5	These deviations involve consolidation of small raingardens into larger, single raingardens: ML3.0 – two raingardens located on either side of a small ridge have been combined into a single raingarden. Total filter size has decreased by 140m ² . MM2.1 – three raingardens have been combined into a single raingarden with the total filter size being within the range recommended by JWP. M3.5 – two raingardens have been combined into one. Total filter size has decreased by 25m ² . BCC explains these deviations were made based on its modelling to achieve practical infrastructure outcomes.	We consider that BCC's explanation for these deviations is reasonable and nexus is established. The net difference in filter size as a result of these deviations is negligible.
Raingardens ML1.1, MS1.1	The filter size of these raingardens has been increased: ▼ ML1.1 – by 4,000m ² ▼ MS1.1 – by 3,300m ² BCC explains these deviations were made to achieve a maximum depth of 1.2m in upstream storage areas to address flooding safety risks and to limit hydraulic loading on the treatment area to acceptable levels.	While the cost of these deviations is high (around \$3.98m), ^b we consider that BCC's explanation for these deviations is reasonable and nexus is established.

^a The combined cost of culverts MM3.11 and MM3.13 is \$5.41m. This compares with the channel proposed by JWP, costing \$2.99m (indexed from July 2013 cost of \$2.85m). Therefore the cost of the deviation is \$2.43m.

^b This deviation cost has been calculated using BCC increase in filter size (4,000m² + 3,300m² = 7,300m²) multiplied by the indexed JWP per square meter rate for raingardens (\$545.01/m²).

Source: CP21, CP21 Works Schedules, JWP, *Preliminary Cost Estimate Marsden Park Residential Precinct*, 22 July 2013.

We have also examined the process and decisions leading to the redesign of stormwater works in the MPIP Little Creek catchment to meet 'ideal', rather than standard or minimally accepted, stormwater outcomes. On balance, we find nexus is established for the proposed stormwater management strategy for the MPIP Little Creek catchment. However, to remove the current ambiguity around the objectives that apply to stormwater works funded through contributions plans, we recommend DPE review and clarify the NSW Government's guiding stormwater management objectives.¹⁰⁶ in the Practice Note, so it is clear in which circumstances each applies.

4.3.2 Ideal stormwater outcomes – MPIP Little Creek catchment

CP21-2012 included stormwater management works in the MPIP that were designed to meet the 'standard' stormwater management objective. Since IPART's assessment of CP21 in 2012, BCC has identified an intact chain of ponds tributary of Little Creek (TLC) that is immediately downstream of the MPIP. The TLC is located within the Air Services Site that is zoned for environment conservation. BCC considered the TLC required particular protection because it is a rare example of a relatively intact chain of ponds creek in Western Sydney..¹⁰⁷

BCC has included stormwater quality and quantity works in CP21-2016 that are designed to manage stormwater from the proposed development and to protect the TLC, on the basis that:

- ▼ the ideal stormwater outcome is required under the BCC Growth Centre Precincts DCP
- ▼ a major project approval by the Minister for Planning's delegate under section 89E of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the IKEA distribution centre in the MPIP Little Creek catchment required this development to have a stormwater management plan that was prepared to meet the ideal stormwater outcome, and
- ▼ this approach is supported by OEH.

Stormwater management objectives under the BCC Growth Centre Precincts Development Control Plan (DCP)

The BCC Growth Centres DCP establishes the targets for flooding and water cycle management in Marsden Park (and other BCC Growth Centre precincts). It provides that the trunk stormwater system is to be constructed and maintained by the council in accordance with the Riparian and Water Cycle Management Strategy and to achieve the water quality targets set by the (former) Department of Environment, Climate Change and Water (DECCW) outlined in Table 4.5.

¹⁰⁶ The current water quality and environmental flow targets have been established by the (former) Department of Environment, Climate Change and Water (DECCW). BCC's trunk stormwater system strategy, as specified in the BCC Growth Centres Precincts DCP, seeks to achieve these targets.

¹⁰⁷ CP21, p 12 and see Box 4.1.

Table 4.5 DECCW water quality and environmental flow targets

	Water Quality				Environmental Flows
	% reduction in pollutant loads				
	Gross pollutants (>5mm)	Total suspended solids	Total phosphorus	Total nitrogen	Stream erosion control ratio ^a
Stormwater management objective	90	85	65	45	3.5-5.0 : 1
‘Ideal’ stormwater outcome	100	95	95	85	1:1

^a This ratio should be minimised to limit stream erosion to the minimum practicable. Development proposals should be designed to achieve a value as close to one as practicable, and values within the nominated range should not be exceeded. A specific target cannot be defined at this time.

Source: BCC Growth Centres DCP, p 15.

In relation to native vegetation and ecology, the DCP provides:

Development on land that adjoins land zoned E2 Environmental Conservation is to ensure that there are no significant detrimental impacts to the native vegetation and ecological values of the E2 zone..¹⁰⁸

The land upon which the TLC is located is zoned EC Environmental Conservation under the *State Environmental Planning Policy (Sydney Regional Growth Centres) 2006*. This zoning is the equivalent of E2 under the DCP, suggesting the DCP's requirements in relation to native vegetation and ecology should also apply to it.

BCC's strategy to protect the TLC

BCC has included stormwater quality and quantity works in CP21-2016 that are designed to manage stormwater from the proposed development and to protect the TLC. Its assessment of the TLC and how to protect it, based on the advice of consultant Bligh Tanner Pty Ltd, is summarised in Box 4.1.

¹⁰⁸ BCC Growth Centre Precincts DCP, p19.

Box 4.1 BCC's assessment of the TLC based on Bligh Tanner's advice

BCC engaged Bligh Tanner Pty Ltd in 2015 to develop an alternative stormwater strategy to protect the TLC. Bligh Tanner confirmed BCC's assessment of the TLC, noting:

A tributary of Little Creek is in the best condition of any creek within the Blacktown Local Government Area and is a rare example of an intact natural chain of ponds creek form on the Cumberland Plain. It is worthy of preservation.^a

Bligh Tanner assessed the TLC using the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines for fresh and marine water quality (2000). The ANZECC Guidelines:

...provide a framework for assessing water quality based on whether the physical, chemical and biological characteristics of a water way support...community environmental values. In effect the guidelines help to define the water quality needed to protect these values.^b

Bligh Tanner found while some water quality parameters appear to be within the range recommended by ANZECC for lowland 'slightly impaired' streams, several are not. It argued:

Despite being higher than the ANZECC trigger values in some cases, the overall water quality represents a stream in good condition. Based on water quality TLC is likely to support a reasonable instream ecosystem diversity, consistent with the observation that many of the macroinvertebrate taxa found in the stream are not commonly found in urban sites.^c

Bligh Tanner noted that maintaining existing water quality could be an objective for the TLC, however "the most confident outcome would be achieved by ensuring that future water quality meets the ANZECC targets" (for lowland 'slightly impaired' streams).

To achieve the water quality objective for the TLC (improving water quality to meet ANZECC parameters), Bligh Tanner advised "the DEC (2006) 'Ideal pollutant removal' targets should be used". However, Bligh Tanner noted it is not possible to achieve these water quality objectives without an integrated approach to flow and water quality management, as "the volume and rate of runoff will also have impacts on channel morphology and instream taxa through direct washout as well as habitat modification".

^a Bligh Tanner, *Protecting Little Creek: Marsden Park Industrial Precinct Little Creek Catchment Alternate Stormwater Management Strategy*, June 2015 (Bligh Tanner 2015), p 7.

^b Department of Environment and Conservation NSW, *Using the ANZECC Guidelines and Water Quality Objectives in NSW*, June 2006, p 2.

^c Bligh Tanner 2015, p 13.

Proposed stormwater management works to protect the TLC

The stormwater management proposal, recommended by Bligh Tanner to protect the TLC and further developed by BCC, is an integrated approach to manage stormwater quantity and quality from the surrounding development in the MPIP Little Creek catchment. It involves:

- ▼ Increasing the capacity of three detention basins (L1.1, L2.2 and L3.2) at an estimated cost of \$2.9 million.¹⁰⁹ These basins have three stages of discharge:
 - divert to northern channel
 - direct a trickle (or base flow) to the TLC, and
 - control high flow discharges to the TLC by keeping peak runoff event flow rates to no greater than their predevelopment flows.¹¹⁰
- ▼ Constructing a flow diversion culvert (L4.1) at a cost of \$3.8 million to divert flow from the MPIP Little Creek catchment to the MPP Little Creek catchment.
- ▼ Constructing a standalone raingarden (L4.2 at the MP end of culvert L4.1) at an estimated cost of \$1.4 million.¹¹¹ as a water quality measure for stormwater that has been diverted from the MPIP to the MPP.

We estimate that the cost of BCC's proposal for additional stormwater works to protect the TLC is \$8.03 million.

Our assessment of nexus for additional stormwater works to protect the TLC

The DECCW water quality and environmental flow targets that are outlined in the DCP do not specify the circumstances in which each objective applies: that is, it is unclear when the "stormwater management objective" applies, and when the "ideal stormwater outcome" applies.

Our interpretation is that the relevant standard is determined by the impact of the development: the stormwater management objectives should be set with reference to the pre-development conditions in surrounding areas. For most development, pre-development conditions can be maintained with stormwater works designed to meet the DECCW "stormwater management objective" targets. However, for development in or surrounding environmentally sensitive areas, it may be necessary for stormwater works to be designed to the DECCW "ideal stormwater outcome" targets.

In the case of the MPIP Little Creek catchment, Bligh Tanner's assessment of the TLC establishes that stormwater works in this catchment should be designed to the ideal stormwater outcome so that future water quality in the TLC meets the ANZECC targets. This would involve a slight improvement to pre-development conditions.

¹⁰⁹ This estimate has been calculated using the aggregate increased basin size multiplied by JWP's indexed average per cubic metre cost for basins (see Appendix C).

¹¹⁰ Blacktown City Council: *Concept Drainage Design Report CP21 Basins L1.1, L2.2, L3.2 to protect The Little Creek Tributary*, May 2016, p 15.

¹¹¹ This estimate has been calculated using JWP's indexed average per square metre cost for raingardens (see Appendix C).

The Minister for Planning's development consent for the IKEA distribution centre in the MPIP Little Creek catchment requires the applicant to prepare a Stormwater Management Plan in accordance with the recommendations of Bligh Tanner's strategy to protect the TLC. This condition of development consent suggests the NSW Government:

- ▼ supports the protection of the TLC
- ▼ considers that the stormwater management works in the MPIP Little Creek catchment should be designed to protect the TLC (ie, to achieve the ideal stormwater outcome), and
- ▼ considers that developers in the MPIP Little Creek catchment should pay the cost of achieving this outcome.

On balance, we consider the Minister for Planning's development consent for the IKEA distribution centre is compelling and establishes nexus for stormwater works in the MPIP Little Creek catchment to protect the pre-development conditions at TLC.

We note that OEH also supports the achievement of ideal stormwater outcomes to protect the TLC. It expressed this support directly to BCC¹¹² and in its submission on the IKEA distribution centre development application:

OEH is of the view that the development should have no indirect impacts on the high biodiversity values of the adjoining and downstream lands and therefore strongly supports the application of the DCP 'ideal' stormwater targets. It is recommended the development not be approved unless it can be demonstrated these targets can be achieved..¹¹³

We also consider that greater clarity is required around the circumstances in which the relevant (DECCW) water quality and environmental flow targets apply. This clarity will assist councils in preparing development contributions plans and IPART in assessing whether nexus is established for proposed stormwater management works. We therefore recommend the DPE review and clarify in the Practice Note the relevant stormwater management objectives that apply to stormwater works funded through contributions plans..¹¹⁴

4.3.3 BCC review of stormwater management in the South Creek catchment

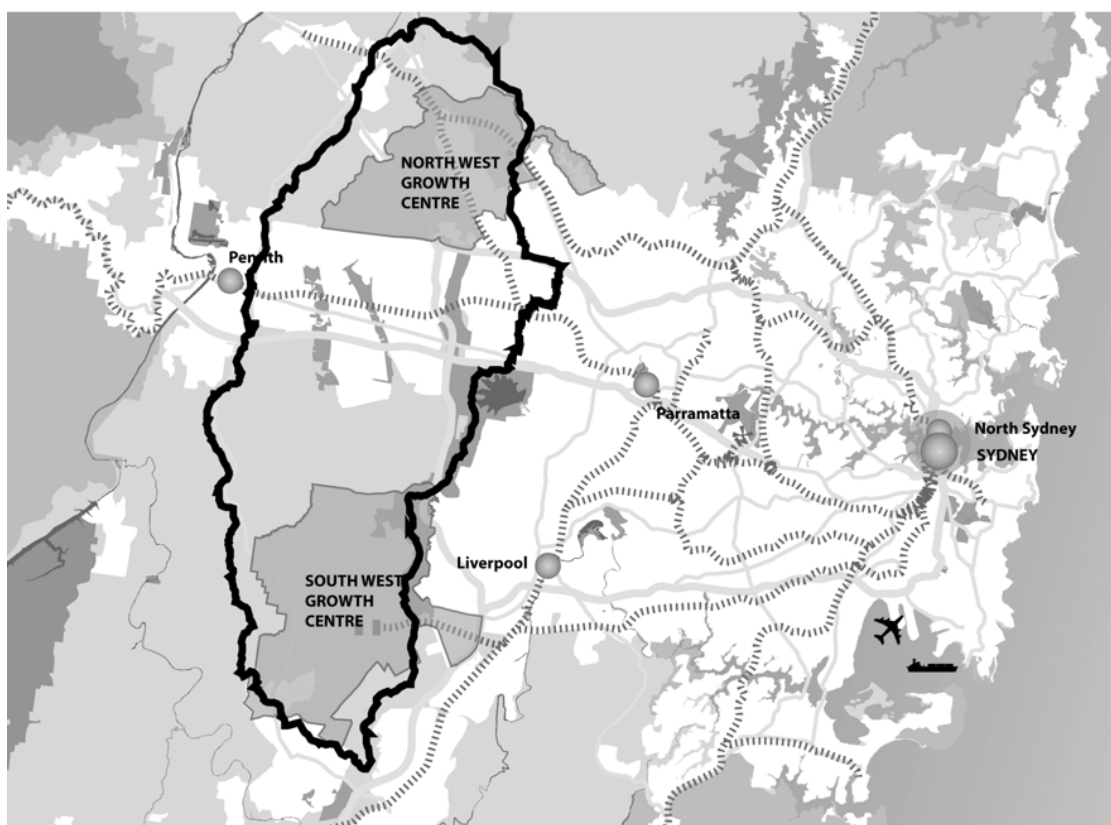
We understand that BCC is undertaking a broader review of stormwater management within the South Creek catchment. The South Creek catchment is located across both the North West and South West Priority Growth Areas (as shown in Figure 4.1) and within Camden, Penrith, Blacktown and Hawkesbury LGAs.

¹¹² OEH, Letter to Blacktown City Council, 29 February 2016.

¹¹³ OEH submission to development application SSD 6954, IKEA Distribution Services Australia Pty Ltd, 18 September 2015, p 1.

¹¹⁴ IPART has recently provided DPE with a list of suggested amendments to the Practice Note, mainly to further clarify which infrastructure is on the EWL. This includes clarifying the status and interpretation of the water quality and environmental flow standards in guiding the nature and extent of stormwater infrastructure required for new development: IPART, Letter to DPE, June 2017.

Figure 4.1 The South Creek catchment



Source: Growth Centres Commission, 2006, as reproduced in Rae, D., *Water Management in South Creek Catchment: Current state, issues and challenges*, November 2007, p 9, accessed at <https://www.irrigationaustralia.com.au/documents/item/234> on 27 April 2017.

We support BCC in undertaking this review and consider a holistic approach to the management of stormwater on a catchment or regional level would result in improved and more efficient management outcomes across the entire catchment.

We note that BCC's review may identify amendments that should be made to the design of stormwater works in CP21 and other contributions plans in surrounding areas. An amended approach to stormwater management may remove the need for some basins, and may change water flows in the precincts, which would affect land costs across all infrastructure categories. Therefore, CP21 should be amended following BCC's review of the South Creek catchment to implement the outcomes of the review.

4.3.4 Recommended approach to planning stormwater infrastructure on a whole of catchment or regional level

IPART finding

- 11 The current planning and delivery of stormwater infrastructure on a precinct, rather than a broader catchment level, might lead to sub-optimal outcomes.

Recommendations

- 9 For areas within the South Creek catchment, the Minister require that stormwater management planning occur on a catchment or regional level, rather than at the precinct level, to achieve more efficient management outcomes across the entire catchment.
- 10 BCC amend CP21 following the completion of its review of the South Creek catchment to implement any relevant findings in relation to stormwater management.

Our review of the proposed stormwater infrastructure in CP21 has highlighted a broader issue relating to the limitation of planning stormwater infrastructure on a precinct basis. Currently, councils prepare contributions plans to deliver infrastructure based on the demand arising from the proposed development within the relevant precincts. In the case of stormwater management, however, the planning of infrastructure to manage stormwater flows within the precinct boundary, rather than in the context of a broader catchment, might lead to sub-optimal design and construction of stormwater infrastructure.

We recently made a submission to the draft Environmental Planning and Assessment Amendment Bill 2017 in which we identified that there can be downstream benefits from the stormwater infrastructure and more efficient outcomes from a regional, rather than a precinct-based, approach to planning infrastructure needs. We recommended that section 94 funds could be supplemented by other funding sources such as a regional levy to fund a share of the drainage costs in Sydney's greenfield sites, where there are downstream benefits..¹¹⁵

We consider that the Minister should require that stormwater needs for areas within the South Creek Catchment, extending across the North and South West Priority Growth Areas including Marsden Park, are planned regionally. Such an approach would reduce the need to revise the infrastructure needs in a contributions plan when they are based on a more piecemeal approach to planning, as is likely to be necessary for CP21 after the overall stormwater needs of the South Creek Catchment have been reviewed. It would also help the State Government in considering the costs and benefits of a regional levy to fund a share of the drainage costs in these greenfield sites.

4.4 Criterion 3: Reasonable stormwater facility costs

CP21 includes \$241.5 million in capital costs for stormwater infrastructure (equating to an average contribution per hectare of \$244,697), comprising:

- ▼ Basins – \$131.8 million
- ▼ Raingardens – \$31.0 million
- ▼ Channels – \$44.7 million
- ▼ Culverts – \$24.2 million, and
- ▼ Gross Pollutant Traps (GPTs) – \$9.7 million.

At the date of commencement of CP21 (December 2016), approximately 6.7% of stormwater works had been constructed, with 93.3% yet to be constructed..¹¹⁶

¹¹⁵ IPART, *Submission – draft Environmental Planning and Assessment Bill 2017*, 28 March 2017, p 137.

¹¹⁶ CP21, Appendix H, p 83.

We considered the approach in CP21 to cost the capital works for stormwater infrastructure in the context of whether the estimates in the plan are reasonable and up-to-date. We then considered the reasonableness of the cost estimates and choice of indices to escalate cost estimates to current dollars.

BCC employed the following approaches to estimate the cost of stormwater works in CP21:

- ▼ Cost of completed stormwater works is based on actual CAPEX, indexed by CPI.
- ▼ Cost estimates of other stormwater works are based on the stormwater strategies developed by JWP (and amended by BCC) and BCC tender rates.
- ▼ Land cost estimates for stormwater works have been calculated by BCC using average land acquisition rates for each catchment applied to the total area of land to be acquired.

IPART findings

- 12 The cost estimates for stormwater infrastructure in CP21 are high for stormwater basins, raingardens and channels, arising from high prices and rates used by BCC and underlying assumptions that are not reasonable.
- 13 Consultant costings are not available to compare BCC's cost estimates for culverts in CP21, however these estimates incorporate the same underlying assumptions that have been identified as not reasonable for other stormwater infrastructure costs.

Recommendations

- 11 BCC remove \$95,464,177 in stormwater infrastructure costs, comprising:
 - \$78,099,747 for stormwater basins,
 - \$3,190,615 for raingardens, and
 - \$14,173,815 for channels.
- 12 BCC review the cost of culverts in CP21 and underlying assumptions that have been identified as contributing to high overall stormwater works cost estimates.

We found that overall, the cost estimates for stormwater basins, raingardens and channels in CP21 are high, arising from the high cost rates used by BCC and underlying assumptions that are not reasonable. We also found that the cost estimates for culverts are also likely to be high for the same reasons, although consultant costings for culverts are not available for comparison.

Our findings and recommendations on these approaches and the reasonableness of certain cost estimates are explained below.

4.4.1 CP21 stormwater cost estimates are high compared with costs in other contributions plans

Table 4.6 shows the stormwater works costs proposed by BCC for CP21 compared with the costs IPART has assessed as reasonable in other recent plans. The table also includes the cost estimates from the stormwater consultants for the Austral and Leppington North precincts. This area straddles the boundary of the Camden and Liverpool LGAs.

Table 4.6 Comparison of CP21 stormwater works cost estimates with IPART-assessed reasonable costs in other contributions plans (\$June 2016)

Contribution Plan	LGA	NDA (ha)	Population	Cost (\$m)	Cost \$/person	Cost \$/NDA
Schofields (CP24)	Blacktown	201	8,567	63.7	7,430	316,697
Marsden Park (CP21)	Blacktown	987	33,742	241.5	7,158	244,697
Riverstone & Alex Ave (CP20)	Blacktown	819	44,228	141.6	3,201	172,856
Area 20 (CP22)	Blacktown	108	6,400	17.0	2,662	157,740
Box Hill North (CP16)	The Hills	296	13,498	33.4	2,474	112,849
Box Hill (CP15)	The Hills	729	30,687	68.1	2,219	93,423
West Dapto	Wollongong	1,951	56,579	70.6	1,248	36,179
Austral & Leppington North ^a	Liverpool & Camden	1,362	54,300	183.6	3,381	134,810

^b IPART has not assessed this contributions plan.

Note: Although we also assessed plans for North Kellyville (CP13) (THSC) and Balmoral Rd (CP12) (THSC), the stormwater cost estimates in these plans are much lower than in other plans because the precincts are in the Rouse Hill Development Area where the responsibility for stormwater management rests with Sydney Water (Source CP12 (2011) p 63). We also excluded the Rockdale Urban Renewal Area (Bayside Council) from our comparison because it is an infill area and there are higher costs associated with retrofitting stormwater infrastructure in a developed area.

Sources: CP21 (2016); THSC, CP20 (2015); West Dapto Contributions Plan (2016); CP15 (2016); CP13 (2011); CP16 (2015); CP24 (2014); CP12 (2011); Liverpool Contributions Plan – Austral and Leppington North Precincts (2014); Austral Contributions Plan, Camden Section 94 Contributions Plan - Leppington North Contributions Plan Precinct, (2014) and IPART calculations.

Stormwater works cost estimates in CP21 are significantly higher, on either a share of NDA or population basis, than our recommended reasonable costs in CP20 (Riverstone & Alex Ave). However, our recommended costs in CP20 excluded \$133.1 million of soil disposal (tipping) costs (see Box 4.2). Since our assessment, BCC has revised its soil disposal methodology for CP21 compared with the approach in CP20.¹¹⁷ It is now separating excavated material to achieve lower tipping fees. This would reduce the cost of tipping fees in CP21. However, as discussed later in this chapter (section 4.4.3) there appear to be a number of other assumptions that are contributing to higher stormwater cost estimates in CP21.

Schofields (CP24) has the highest stormwater cost estimates on either a share of NDA or population comparison. However, the relatively low population and low NDA contribute to this, as does the flood prone nature of the land around the Eastern Creek area.¹¹⁸ Area 20 (CP22) also has a relatively small NDA and population, but relatively lower costs compared with other BCC contributions plans. The main reason for this is that stormwater modelling did not require any detention basins in this small area whereas Schofields (CP24) requires six detention basins.

Box Hill (CP15) and Box Hill North (CP16) precincts are both in The Hills Shire Council (THSC) LGA and in reasonable proximity to CP21. The NDAs are of similar size or smaller than CP21 yet both have average cost estimates significantly lower than CP21.

¹¹⁷ BCC are currently undertaking a detailed review of all the stormwater costs in CP20. It expects to complete the review later this year: BCC, Email to IPART, 22 May 2017.

¹¹⁸ IPART, *Assessment of The Hills Shire Council's Contributions Plan No 24 – Schofields Precinct*, August 2014, p 49.

Whilst West Dapto has the lowest average stormwater cost estimates of all the contributions plans, this release area is at an earlier stage of development and the estimates are likely to be refined further.

Austral and Leppington North precincts straddle the boundary of the Camden and Liverpool LGAs. IPART has not assessed this plan but we consider it provides another reasonable cost comparison. As discussed in Appendix C, Austral and Leppington North have a large number of smaller basins than CP21, which could be expected to lead to relatively higher costs.

Overall we found the stormwater cost estimates in CP21 to be high compared to other contributions plans. Therefore we undertook additional analysis of the proposed costs in CP21 by comparing alternative consultant cost estimates for the infrastructure, and reviewing BCC's costing methodologies and assumptions.

4.4.2 BCC's proposed stormwater costs are much higher than estimates by the consultants (JWP)

The stormwater management strategies for the MPIP and MPP were prepared and costed by J Wyndham Prince Pty Ltd (JWP). These strategies were commissioned by the Department of Planning for the MPIP, and by the Winten Property Group for the MPP, as follows:

Table 4.7 MPIP and MPP stormwater strategies costed by JWP

Author	Title	Date	Includes
JWP	<i>Marsden Park Industrial Precinct Post Exhibition Water Cycle Management Strategy Report Including Consideration of Climate Change Impacts</i>	February 2011	Preliminary costings for detention basins in the MPIP only
JWP	<i>Marsden Park Residential Precinct – Post Exhibition Water Cycle and Flood Management Strategy Report</i>	July 2013	Preliminary costings for detention basis, standalone raingardens and channels in the MPP

As outlined in section 4.3.2, some of the stormwater works proposed by JWP have been amended following review by BCC.

The stormwater cost estimates in CP21 are high compared with JWP's preliminary cost estimates.¹¹⁹ While JWP's costings were preliminary cost estimates, our assessment has found JWP's estimates are, in some cases, more reasonable than BCC's estimates based on the underlying construction assumptions concerning excavation, cartage and soil disposal. We have made recommendations for amendments to stormwater infrastructure costs accordingly.

With the exception of additional works to achieve ideal stormwater outcomes for the TLC, the costs of stormwater works in the MPIP in CP21-2016 are less than the costs of the same facilities in CP21-2012, by around \$20.6 million. This reduction in costs appears to be

¹¹⁹ The stormwater works costs in the 2012 version of CP21 were significantly higher than the costings in JWP's February 2011 report; and the costs proposed by BCC in for CP21-2016 are also significantly higher than JWP's cost estimates across both the MPIP and MPP.

attributable to BCC's adjustment of soil disposal rates in response to IPART's recommendation in our assessment of CP20 in July 2016. This is explained in Box 4.2.

Box 4.2 Soil disposal rates – IPART recommendation in CP20 (July 2016)

As part of its assessment of CP20 (Alex Ave and Riverstone Precincts) in July 2016, IPART recommended that \$139.9 million of estimated soil costs be removed (*\$133.1 million attributable to stormwater works*). The Minister had previously required that a working group be established to review soil disposal issues before BCC was eligible for LIGS funding. IPART recommended that the soil disposal costs in CP20 be removed until this issue had been resolved to the Minister's satisfaction.

At the time of finalising the CP20 review in 2016, BCC advised that it had been working on soil disposal costs and had uncovered strategies that may significantly reduce the cost of soil disposal. We understand that some of these strategies have been applied to adjust the soil disposal costs in CP21-2016, accounting for the reduction in stormwater costs in the MPIP.

Source: IPART, *Assessment of Blacktown City Council's Section 94 Contributions Plan No 20: Riverstone and Alex Avenue Precinct*, July 2016.

4.4.3 High stormwater costs arise from high cost rates and underlying assumptions

BCC prepared its cost estimates for stormwater works in CP21 based on its assumptions about construction methods and disposal of excavated material, and using tender rates obtained from contractors. We have reviewed BCC's cost estimates to identify the basis for the high stormwater costs in CP21 compared with JWP's cost estimates and other recent contributions plans. Our analysis suggests that the high stormwater costs in CP21 arise from:

- ▼ Certain high cost rates used by BCC, including:
 - excavation rates for rock and clay, and
 - cartage rates for soil disposal.
- ▼ Certain underlying assumptions about:
 - basin and raingarden construction, and
 - composition of excavated materials in CP21 precincts.

The impact of each of these high cost rates and assumptions on the overall cost estimates is explained below.

Rock, clay and bulk excavation cost rates

The cost of excavation accounts for \$35.2 million, which is around 14.6% of all stormwater works costs in CP21.¹²⁰

¹²⁰ IPART calculations based on CP21 work schedules, "CP21 Marsden Park 2016 Adoption" workbook, various tabs.

We reviewed the rock, clay and bulk excavation cost rates in CP21-2016 with reference to:

- ▼ BCC's costings for CP21-2012 and the recommendations of our consultant (WorleyParsons).¹²¹ who reviewed these costings in 2012
- ▼ relevant rates provided in the *Australian Construction Handbook 2017* by quantity surveyors and construction cost consultants, Rawlinsons,¹²² and
- ▼ geotechnical studies prepared for CP21 and other nearby sites.

To compare the rates in CP21-2016, we indexed all other reference rates to \$June 2016. These are provided in Table 4.8.

Table 4.8 Comparison of excavation rates in CP21 (\$June 2016/m³)

Excavation type	CP21-2012 (BCC)	WorleyParsons 2012	CP21-2016 (BCC)	Rawlinsons 2017
Bulk excavation	\$6.33	\$7.91	\$6.83	\$5.29
Clay	\$20.85	-	\$14.96	\$7.81
Rock	-	-	\$97.65	\$26.56 ^a

^a This figure comprises the indexed value for bulk general excavation and the bulk rock excavation rate, Rawlinsons 2017 p 679.

Source: CP 21, Works Schedule, CP21 Marsden Park Stormwater 2016 Adoption, Basin tab; WorleyParsons, 2012 p 10; Rawlinsons 2017, p 678; IPART analysis including aggregation and indexing to \$June 2016.

BCC's stormwater cost estimates in CP21-2012 were based on an excavation rate for clay and a bulk excavation rate. BCC did not use a differentiated rate for excavation of rock. Our consultant, WorleyParsons, reviewed BCC's costings in 2012 and recommended a flat rate for all excavation (\$7.91/m³). In CP21-2016, BCC has used separate rock, clay and bulk excavation rates. All of these rates are high compared with the Rawlinsons reference rates. Compared with WorleyParsons' bulk excavation rate, BCC's bulk excavation rate appears reasonable.

We note the Rawlinsons' rock excavation rate is a generic rate for all of Sydney, being a composite of costs for excavating a range of different rock types. Therefore it may not be directly comparable to the costs of excavating rock in the CP21 precincts.

To assess the reasonableness of BCC's rock excavation rate, we also reviewed three geotechnical studies that provide information about the type of rock occurring in and around the CP21 precincts.¹²³ The findings of these studies are shown in Table 4.9.

¹²¹ WorleyParsons, *Review of Blacktown City Council Contributions Plan, Marsden Park Industrial Precinct CP21: Stormwater and Transport*, 15 August 2012 (WorleyParsons 2012).

¹²² Rawlinsons, *Australian Construction Handbook 2017*, Edition 35 (Rawlinsons 2017).

¹²³ Geotechnical studies from outside the precincts covered by CP21 were selected randomly from studies that are publicly available on BCC's website.

Table 4.9 Geotechnical studies of rock occurring in areas around Marsden Park

Geotechnical study	Finding
Prepared for Winten Property Group for development in Marsden Park	Alluvial and residual soils found to a depth of 1.3 to 3.0 metres. Bedrock of very low to low strength was encountered at depths ranging from 1.5 to 2.2 metres. ^a
For development in Burdekin St, Schofields	Natural clay encountered from just below the ground surface to depths of between 1.0 to 2.0 metres and low strength shale from depths of between 1.0 to 5.6 metres. Mid-strength bedrock encountered from depths of at least 3.4 metres. ^b
Nagle College, Orwell St, Blacktown	Silty clay to depths of 1.8 to 2.8 metres and “extremely low strength” weathered shale from between 3.2 to 3.7 metres. ^c

^a Geotechnique Pty Ltd, *Proposed residential subdivision development Marsden Park precinct – North West Growth Centre Richmond Road, Marsden Park: Land capability, salinity and contamination assessments report*, Report No. 12576/1AA, 27 February 2012, p 18.

^b Ground Technologies, *Geotechnical investigation at No.138 Burdekin Rd, Schofields*, Geotechnical Report GTE711, 3 March 2016, p 6.

^c STS GeoEnvironmental Pty Ltd, *Geotechnical Investigation, Nagle College 58A Orwell St Blacktown*, Report No.16/1573 Project No: 21002/7058C, June 2016, Appendix A.

These studies suggest that with proposed basin depths in CP21 of 1.2 metres, much of the excavated material for basins and channels is unlikely to be harder than low strength shale. While raingardens will be excavated to greater depths, these are at small volumes and the excavation is likely to encounter only mid-strength shale at depth.

We presented this information in our draft report and BCC commented that its rock rate of \$97.65/m³ was comparable to Rawlinsons’ rates ranging from \$71.40 for soft rock to \$112.50 for hard rock.¹²⁴ However, these rates are from Rawlinsons relating to the excavation of pits, trenches and basements.¹²⁵, not bulk excavation rates.

In this context, BCC’s rock excavation rate of \$97.65/m³ appears to be high. With the site specific information available from local geotechnical studies, we consider the reasonable rock excavation rate for CP21 could be more comparable with Rawlinsons’ generic rock excavation rate that includes denser rocks occurring throughout Sydney that are more expensive to excavate.

In the draft report we also noted that BCC’s excavation rate for clay of \$14.96/m³, while lower than it was in CP21-2012, is still double that of the rates applied by WorleyParsons and Rawlinsons (see Table 4.9). In response, BCC stated that its rate for clay excavation is for more detailed excavation around structures, pits and detailed shaping.¹²⁶ We consider that as the vast majority of the excavation is for basins, channels and raingardens, a general bulk excavation for clay is more appropriate.

Cartage rates for soil disposal and soil relocation

Cartage or haulage costs are a component of the cost of disposing of soil or moving it to another part of the site for reuse. Cartage costs are approximately \$11.8 million or 4.9% of the total stormwater works costs in CP21.¹²⁷

¹²⁴ BCC, Response to IPART’s Draft Report, 28 July 2017, p 5.

¹²⁵ Rawlinsons 2017, p 212.

¹²⁶ BCC, Response to IPART’s Draft Report, 28 July 2017, p 5.

¹²⁷ IPART calculations based on CP21 work schedules, “CP21 Marsden Park 2016 Adoption” workbook, various tabs.

We reviewed the cartage rates for soil disposal in CP21-2016 with reference to:

- ▼ BCC's costings for CP21-2012 and the recommendations of our consultant (WorleyParsons) who reviewed these costings in 2012, and
- ▼ relevant rates provided in the *Australian Construction Handbook 2017* by quantity surveyors and construction cost consultants, Rawlinsons..¹²⁸

We compared the rates in CP21-2016 with other reference rates, based on the cost of carting a cubic metre of soil a distance of 20 kilometres, and indexed reference costs to \$June 2016 (Table 4.10).

Table 4.10 Comparison of cartage rates (\$June 2016/m³)

CP21-2012 (BCC)	WorleyParsons 2012	CP21-2016 (BCC)	Rawlinsons 2017
\$33.73	\$14.20	\$32.20	\$10.88

Note: BCC and WorleyParsons' rates are based on an assumed 20km journey. We have pro-rated Rawlinsons' cartage per km rate of \$0.55/m³ for a similar 20km journey and indexed it to \$June 2016.

Sources: CP21-2016, Work Schedules, "CP21 Marsden Park 2016 Adoption" workbook, "Basin" tab; Rawlinsons 2017, p 678; WorleyParsons, p 13.

This comparison shows that BCC's proposed cartage rates are high compared with WorleyParsons' recommendations in 2012 and with the industry-standard Rawlinsons rate. Once again, we consider this could be one of the reasons for the overall high stormwater cost estimates in CP21.

In response to the draft report, BCC stated that its cartage rate (\$32.20) is as per its schedule rates contract so it cannot be varied. It considers that when looking at combined civil works costs, BCC's individual rates, some of which were higher and others lower, would balance out..¹²⁹

Given the large excavation volumes involved with stormwater works and associated cost implications for contributions plans, it is our view that it would be prudent for the council to consider including an additional rate in its scheduled rates contract for bulk cartage to enable it to better differentiate the costs.

Other assumptions underlying BCC's costings

As with the high rates and prices used in BCC's cost estimates, the assumptions underlying BCC's cost estimates also contribute to the overall high cost of stormwater works in CP21.

¹²⁸ Rawlinsons, *Australian Construction Handbook 2017*, Edition 35 (Rawlinsons 2017).

¹²⁹ BCC, Response to IPART's Draft Report, 28 July 2017, p 5.

BCC's cost estimates for stormwater infrastructure in CP21 have been prepared based on assumptions about:

- ▼ Basin and raingarden construction:
 - basins will have a maximum depth of 1.2 metres, and
 - basins will be excavated to their full depth..¹³⁰
- ▼ The composition and disposal of excavated material:
 - excavated material representing 44% of basin capacity will be disposed of to landfill..¹³¹ and
 - the excavated material will comprise 18% by weight mixed waste and 2% by weight contaminated waste..¹³²

Assumptions about reduced basin and raingarden depth

BCC's similar assumptions about stormwater infrastructure construction and associated soil disposal quantities in neighbouring CP20 (Riverstone and Alex Ave) were reviewed by DPE in 2010. DPE engaged Cardno Limited to provide advice on ways to decrease the cost of stormwater infrastructure, particularly focusing on soil disposal costs.

Cardno advised that stormwater infrastructure costs could be reduced by:

- ▼ reducing the cut depth of basins by raising the surrounding land by more than 900mm to facilitate drainage to the basins
- ▼ increasing the batter slopes of the basins from 1:6 to 1:4
- ▼ making greater use of on-line, rather than off-line basins, to reduce the overall number of basins required, and
- ▼ storing of excavated material and/or going to tender for disposal costs..¹³³

We understand that basins and raingardens in CP21 are being delivered by developers through works-in-kind agreements, using efficient construction methods.

While BCC's cost estimates for CP21 are based on an assumption that basins and raingardens will be excavated to their full depth (maximum 1.2 metres), developers are delivering this infrastructure with reduced depths and using excavated material to raise surrounding land in line with the lower cost construction method recommended by Cardno..¹³⁴

¹³⁰ IPART's site visit 13 March 2017 to Basin 2.2 confirmed that BCC's assumptions on basin construction do not appear to have changed since Cardno's report of June 2010. See Cardno Limited, *Alex Avenue and Riverstone Precincts Section 94 Engineering Review*, Prepared for the Department of Planning, June 2010, (Cardno, June 2010) p 4.

¹³¹ IPART calculations based on CP21 work schedules, "CP21 Marsden Park 2016 Adoption" workbook, Basin tab.

¹³² CP21 work schedules, "CP21 Marsden Park 2016 Adoption" workbook, Basin tab.

¹³³ Cardno Limited, *Alex Avenue and Riverstone Precincts Section 94 Engineering Review*, Prepared for the Department of Planning, June 2010, (Cardno, June 2010) pp 4-9.

¹³⁴ Cardno, June 2010, pp 4-9.

This construction approach is less costly because:

- ▼ the depth and volume of excavation is reduced
- ▼ the material encountered at reduced depths is cheaper to excavate (that is, it is mostly soil and clay, not rock), and
- ▼ disposal costs for excavated material are minimised.

Basin B2.2 in CP21 presents an example of how we have observed that the high rates and underlying assumptions used by BCC to estimate stormwater works costs are contributing to unnecessarily high basin costs (see Box 4.3).

Box 4.3 Example of high rates and assumptions contributing to high basin costs in CP21

On its site visit to Marsden Park, IPART viewed Basin B2.2 which was under construction. BCC's cost estimate for this basin is \$4.7 million, based on excavating and disposing of soil at a landfill site. BCC advised that a developer has agreed to construct the basin in exchange for a works-in-kind credit for this amount.

The developer has achieved a cost saving by reducing the cut depth of soil for the basin and using the cut to raise the batters of the basin. This reduces the earthworks costs and eliminates the soil disposal costs, consistent with the approach recommended by Cardno in its report on how to reduce stormwater costs in CP20.^a

We have reviewed BCC's costings for Basin B2.2 and identified that \$1.9 million of the total cost can be attributed to excavating and disposing of soil. We consider that significant cost savings could be achieved with an adjustment of soil disposal rates and by taking account of the more efficient basin construction method (ie, the basin is cut to half depth and there is a build-up of batters).

^a This is discussed in more detail in our last assessment of Riverstone and Alex Avenue (CP20): IPART, *Assessment of Blacktown City Council's Section 94 Contributions Plan No 20*, July 2016, p 48.

We consider that the proposed cost estimates of basins and raingardens in CP21 should reflect the efficiencies being achieved by developers in delivering the infrastructure.

Composition and disposal of excavated material

BCC's assumptions about the composition of excavated material that is to be disposed at landfill also appear to be contributing to the high stormwater costs in CP21.

BCC has separated excavated material into three categories: Virgin Excavated Natural Material (VENM); mixed waste; and contaminated waste. It assumes that 20% of all excavated material will be taken to landfill. The material taken to landfill will consist of:

- ▼ 80% VENM – at \$21/tonne for disposal
- ▼ 18% Mixed waste – at \$153/tonne for disposal
- ▼ 2% Contaminated waste – at \$231/tonne for disposal.

We consider that BCC's assumption that 18% of all disposal by weight will be mixed waste is unlikely to reflect the composition of excavated material in CP21. JWP analysed each proposed stormwater basin site and this indicates that the percentage of total excavated material that needed to be disposed of at a waste treatment facility is 2.5%..¹³⁵

Marsden Park is a greenfield development of an area that was primarily rural..¹³⁶ As such, with limited development of the area and minimal structures to demolish, only a very small portion of the total excavated material should include mixed or contaminated waste. We stated in our draft report that this is likely to be another reason for high stormwater works costs in CP21. BCC commented that its:

...assumptions relating to disposal material account for uncertainty until geotechnical investigations are conducted. As drainage works are generally near existing watercourses, significant amounts of unsuitable material can be encountered, not just in the excavation areas but also in the proposed fill areas. JWP precinct planning cost estimates are on the low side of expected costs and appear to assume the works are conducted as part of the adjoining development works. They do not allow for items such as extra earthworks costs associated with detailed embankment construction..¹³⁷

We consulted with JWP on BCC's comments. JWP advised that its recent experience with the delivery of stormwater basins in Marsden Park shows that its original assumptions and cost for stormwater basins in MPP are still valid..¹³⁸

Given the very large differences in the estimates for quantities of soil to be disposed of at land fill, we suggest that BCC provide more evidence, in the form of actual costs, to support its assumptions about the composition of excavated material in the CP21 precincts.

4.4.4 Our recommended reasonable costs for the proposed stormwater works

As outlined above, the proposed stormwater works costs in CP21 are high compared with JWP's cost estimates and other recent contributions plans. Our analysis outlined above suggests that these high costs most likely arise from high cost rates and underlying assumptions used by BCC.

In this section we assess the costs of each category of the proposed stormwater infrastructure in CP21 and apply JWP's costings where possible to determine reasonable recommended costs for the stormwater works. We recommend cost reductions of \$95.5 million (or 39.5%) for stormwater works, comprising:

- ▼ \$78.1 million for stormwater basins
- ▼ \$3.2 million for raingardens, and
- ▼ \$14.2 million for channels.

¹³⁵ J. Wyndham Prince, *Post Exhibition Preliminary Cost Estimate, Marsden Park Residential Precinct*, 22 July 2013, various basin cost tables (2) and IPART calculations.

¹³⁶ Department of Planning and Infrastructure, *Marsden Park Precinct Plan: State Environmental Planning Policy (Sydney Region Growth Centres), Post-exhibition Planning Report*, August 2013, p 15.

¹³⁷ BCC, Response to IPART's Draft Report, 28 July 2017, p 5.

¹³⁸ JWP, Emails to IPART, 8 August 2017 and 11 August 2017.

We have also recommended that BCC review the costs of culverts in CP21 to address the cost components that are contributing to high overall stormwater costs.

High stormwater basin costs in CP21 arise from high cost rates and underlying assumptions

Stormwater basin costs in CP21 are \$131.8 million, representing 55% of total stormwater works costs. Our more detailed analysis of stormwater basin costs in CP21, together with raingarden and channel costs, is presented at Appendix C.

This shows there is a significant difference between the basin costs in CP21 and JWP's cost estimates. BCC's total works cost for stormwater basins is \$131.8 million while JWP's estimate is \$50.8 million. We have adjusted for the relatively small variations in BCC's and JWP's basin volumes to calculate a per cubic metre rate for stormwater basins. BCC's per cubic metre rate is \$207.74/m³, whereas the JWP rate is \$85.17/m³.

In response to our draft report BCC stated that it considered that JWP's costs were low and did not take into account extra earthworks costs associated with detailed embankment construction..¹³⁹

In response, JWP advised that its recent experience in the MPP confirmed its original estimate for basin costs in CP21. JWP further noted that basin costs could be much higher in precincts that have fragmented ownership where the same efficiencies cannot be achieved in construction but that this is not the case in CP21..¹⁴⁰

The per cubic metre cost of stormwater basins in CP21 is also high compared with other recent contributions plans..¹⁴¹

Overall, we have found that BCC's cost estimates for stormwater basins in CP21 are not reasonable because of the high rates and underlying assumptions used by BCC. We recommend that these costs be reduced, using JWP's per cubic metre rates for basins of \$85.17/m³.

Applying JWP's per cubic metre rate to BCC's revised basin volumes (accounting for the deviations discussed in section 4.3.2), we recommend the cost of stormwater basins in CP21 be reduced by \$78.1 million.

High raingarden costs in CP21 arise from high cost rates and underlying assumptions

Raingarden costs in CP21 are \$31.0 million, representing 13% of total stormwater works costs (see Appendix C for more detail on our analysis).

Similar to basin costs, BCC's proposed costs for raingardens exceed JWP's costings. Our comparison of JWP and BCC standalone raingarden costs in the MPP showed that JWP's costs are on average 28% lower than BCC's.

While we did not have direct JWP costs for standalone raingardens in the MPIP, we found that BCC's average unit rate for raingardens in the MPIP was more than double JWP's original estimate in the MPP.

¹³⁹ BCC, Response to IPART's Draft Report, 28 July 2017, p 5.

¹⁴⁰ JWP, Emails to IPART, 8 August 2017 and 11 August 2017.

¹⁴¹ See Table C.2 in Appendix C.

We sought and received further advice from JWP.¹⁴² and, consistent with that advice, and the evidence of high rates and underlying assumptions that inform BCC's cost estimates for stormwater items, we have found that BCC cost estimates for standalone raingardens in the two precincts are high.

On the other hand, we found that BCC's average costs of embedded raingardens in the MPP and the MPIP were more reasonable compared to JWP's indexed estimates for embedded raingardens.¹⁴³ This is likely to be because BCC assumptions about excavation and soil disposal rates and quantities have a direct effect on its cost estimates for standalone raingardens, and so these costs appear, to a considerable extent, to be captured in the excavation and soil disposal estimates of the relevant basin to which they belong.

We are not recommending cost reductions for embedded raingardens, however we do recommend the cost of standalone raingardens in the MPIP be reduced by 27%, consistent with the weighted average difference in costs between JWP and BCC for standalone raingardens in the MPP. This equates to a rate of \$640/m² for all standalone raingardens in the MPP and MPIP, which is consistent with JWP's advice that a rate of around \$650/m² would not be unreasonable for raingardens.¹⁴⁴ The result is a reduction in costs for raingardens in CP21 of \$3.2 million.

High stormwater channel costs in CP21 arise from high cost rates and underlying assumptions

Stormwater channel costs in CP21 are \$44.74 million, representing 19% of total stormwater works costs (see Appendix C for more detail on our analysis).

JWP's stormwater management plan for the MPP included channel costs, however its plan for the MPIP did not. Our comparison of JWP and BCC channel costs in the MPP in the draft reported showed BCC's cost estimates were on average 41.4% higher than those of JWP's total channel costs.¹⁴⁵

In response to the BCC general comments that JWP's cost estimates were low we sought further advice from JWP regarding channel costs.¹⁴⁶

JWP has had more recent experience with the delivery of channels TC1 and TC2 in the MPP since its preliminary cost estimates.¹⁴⁷ These two channels represent 47% of the total channel costs in CP21.

It subsequently provided updated cost estimates for TC1 and TC2, which were 27% lower than BCC's estimates. It also further advised that it was reasonable to apply the same percentage cost reduction across the remaining channels in CP21.

On the basis of this analysis and the evidence of high rates and underlying assumptions that inform BCC's cost estimates for stormwater items, we have found that the cost estimates for stormwater channels in CP21 are unreasonably high. We recommend that these costs be

¹⁴² JWP, Emails to IPART, 8 August 2017 and 11 August 2017.

¹⁴³ We only have data for embedded raingardens in the MPP from JWP.

¹⁴⁴ JWP, Emails to IPART, 8 August 2017 and 11 August 2017.

¹⁴⁵ See Table C.5 at Appendix C.

¹⁴⁶ BCC, Response to IPART's Draft Report, 28 July 2017, p 5.

¹⁴⁷ JWP, Emails to IPART, 8 August 2017 and 11 August 2017.

reduced consistent with the weighted average difference in costs between JWP.¹⁴⁸ and BCC for stormwater channels TC1 and TC2 in the MPP. This would result in a reduction in costs for stormwater channels in CP21 of \$14.2 million.

High gross pollutant trap (GPT) costs in CP21

In our draft report we recommended cost reductions for GPTs of 9.8%. However, since then, JWP advised it was observing higher costs with GPTs which were now closer to BCC-estimated costs. We therefore find that the estimated costs for GPTs in CP21 are reasonable.

Culvert costs in CP21 should be reviewed

The cost of culverts in CP21 is \$24.2 million, representing 10.0% of total stormwater costs.

BCC's estimated culvert costs include a number of the same components that we consider to be high in other stormwater infrastructure categories, such as basins and raingardens. These include the cost rates used by BCC (excavation rates for rock and clay) and BCC's underlying assumptions about basin and raingarden construction and the composition of excavated materials in CP21 precincts.

We do not have any detailed JWP costings for culverts to compare against BCC's cost estimates. In addition, benchmarking culverts is difficult because their width and height can vary depending on the application. Therefore a benchmark per metre rate for culverts can be misleading.

Given that culvert costs include a number of the same components that we identify as high cost in other stormwater infrastructure categories, we recommend that BCC review the cost of culverts in CP21 and address the cost components that we have identified as contributing to high overall stormwater costs.

4.5 Criterion 3: Reasonable stormwater land costs

IPART finding

- 14 Consistent with Finding 5, the revised land acquisition cost for stormwater infrastructure is reasonable, except:
- the cost estimates for channels L3.6 and M1.2, which assumes that all land is unconstrained (with underlying zonings of IN2 and B7) when 50% and 80% of the land respectively is currently constrained.

¹⁴⁸ JWP, Emails to IPART, 8 August 2017 and 11 August 2017.

Recommendation

- 13 BCC reduce the proposed cost of acquiring land for stormwater purposes in CP21 by \$12,959,704 to \$230,252,045, reflecting BCC's revised cost estimates (a reduction of \$7,300,000) and an adjusted valuation for channels L3.6 and M1.2 to assume that 50% and 80% of the land is constrained (a reduction of \$1,333,080 and \$4,326,624 respectively).

CP21-2012 included \$243.2 million in land acquisition costs for stormwater infrastructure. This reflected an average rate of \$212/m² for stormwater land in the MPP and MPIP. At the date of adoption of CP21 (December 2016), all 114.95 hectares of land for stormwater was still to be acquired by BCC.¹⁴⁹ Upon our request for additional land acquisition information as explained in section 3.5, BCC proposed revised stormwater land costs of \$235.9 million which reflected an average rate of \$206/m² for land yet to be acquired.¹⁵⁰

The total area of stormwater land is still 114.95 hectares. The total value of this land has reduced by \$7.3 million, largely because of the increased amount of land identified as constrained. We understand that 13.58 hectares of the 114.95 hectares has or will be acquired, primarily through VPAs, at an already agreed price totalling \$27.3 million. This leaves 101.37 hectares remaining to be acquired, estimated to cost \$208.7 million.

As outlined in section 3.5.2, we found BCC's revised approach to land costings to be reasonable as it incorporated advice on the average rates to apply to different underlying zonings from an external valuer, and showed the application of the rates to individual parcels of land. For stormwater, we further considered the application of the rates and assumptions about the proportion of land constrained and unconstrained to the relevant parcels of land.

4.5.1 Application of the rates to land to be acquired for stormwater infrastructure

Table 4.11 provides an overview of the portion of land yet to be acquired for stormwater infrastructure assessed for each zoning category. We consider the assessment to be reasonable with the exception of Channel L3.6 and Channel M1.2.

¹⁴⁹ CP21, Appendix H, p 83.

¹⁵⁰ Additional supporting information provided by BCC, 8 June 2017.

Table 4.11 Areas of stormwater land in each zoning category yet to be acquired in BCC's revised land cost estimates

Zoning	Area (ha)	Percentage
Constrained	71.03	70.1%
R2	6.73	6.6%
R3 HOB 14	4.57	4.5%
R3 HOB 16	0.42	0.4%
R3 HOB 21	3.76	3.7%
E3	0.08	0.1%
IN1	6.25	6.2%
IN2	1.55	1.5%
B2 HOB 28	0.56	0.5%
B5 'F'	3.15	3.1%
B7	3.26	3.2%
Total	101.37	

Source: Additional supporting information provided by BCC, 8 June 2017 and IPART calculations.

Costs for Channel L3.6 and Channel M1.2 should reflect the extent of current constraints

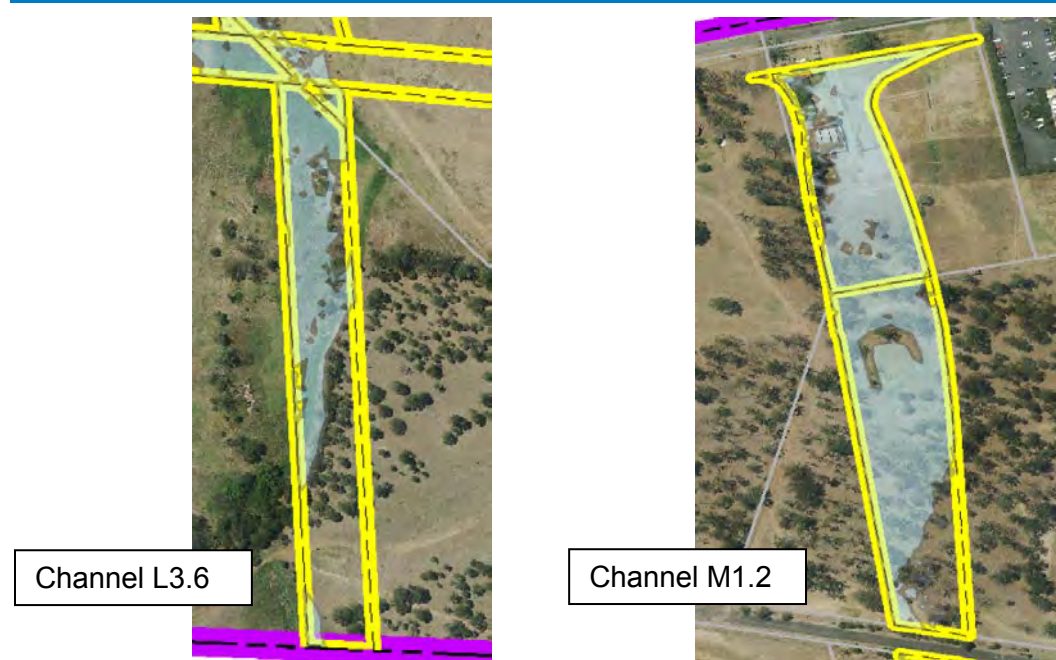
We recommend adjustments to the proposed values of land for:

- ▼ Channel L3.6 in the Little Creek catchment in the MPIP, and
- ▼ Channel M1.2 in the Marsden Creek catchment in the MPIP..¹⁵¹

This reflects our analysis of the proportions of land which are constrained and unconstrained in the costings, as summarised in Table 4.12 and displayed in Figure 4.2.

¹⁵¹ M1.2 is co-located with road R1 but BCC has separately identified the land areas.

Figure 4.2 Constrained land for Channel L3.6 and M1.2



Data source: Additional supporting information provided by BCC, 16 June 2017.

Table 4.12 Recommended adjustment to constrained stormwater land areas

	L3.6	M1.2
Land area (ha)	1.1109	1.3032
BCC constrained area (ha)	0.0000	0.0000
BCC constrained area	0%	0%
BCC underlying zoning	IN2	B7
IPART underlying zoning	IN2	B7
IPART constrained area	50%	80%
IPART constrained area (ha)	0.5555	1.0426
Difference in constrained area (ha)	0.5555	1.0426
Land Value Difference (\$)	\$1,333,080	\$4,326,624

Source: BCC, Email to IPART, 8 June 2017, CP21 Land Acquisition workbook, "Land AQ" tab; BCC, Email to IPART, 16 June 2017, Floodmapping pdf; and IPART calculations.

Based on the GIS flood maps provided by the council, we estimate that 50% of the land for Channel L3.6 is below the 1:100 flood level and therefore constrained. BCC proposed 100% of the land to be unconstrained at the IN2 rate. For Channel M1.2, we estimated 80% of the land to be constrained land whereas BCC proposed that 100% of the land is unconstrained at the B7 rate.

BCC officers advised that the higher assumed unconstrained rates reflect that the land is still potentially developable because the landowner could cut in one area and fill in another, or import fill and raise the level of the land above the 1:100 year flood level.¹⁵²

¹⁵² Meeting between IPART and BCC at BCC chambers, 16 June 2017.

In the case of L3.6 and M1.2 it appears that imported fill would have to be used to raise all the land above the 1:100 year flood level. Apart from the cost of earthworks on site, raising the whole area would also have an impact on drainage design downstream and likely incur further significant cost. This type of cost should be borne by the landowner and reflected in a lower purchase price.

In the absence of information about the extent of the cost involved in this work, we consider that 50% of the land in L3.6 to be constrained and 80% of the land in M1.2 to be constrained. This would discount the overall cost of the land from the average underlying zoning rates, consistent with a likely reduced sale price for the land. This results in a reduction of \$1.3 million in stormwater land costs for channel L3.6, and \$4.3 million for channel M1.2.

4.6 Criterion 5: Apportionment

Apportionment refers to the division of the costs equitably between all those who create the need for the infrastructure, including any existing population. While nexus is about establishing a relationship between the development and demand for infrastructure, apportionment is about quantifying the extent of the relationship by ensuring that costs are shared appropriately between and within developments. Full cost recovery from contributions should only occur where the infrastructure is provided to meet the demand arising from new development..¹⁵³

IPART findings

- 15 The apportionment of stormwater infrastructure in CP21 is reasonable except for the division of MPIP Little Creek into smaller stormwater quality catchments based on development type, which does not reflect BCC's approach to stormwater quality management and therefore results in an unfair distribution of costs.
- 16 The contribution rates for stormwater quality in the MPP are not transparent, in so far as further calculation is required to determine the contribution rate for some categories of land.

Recommendations

- 14 BCC apportion the cost of stormwater quality management in MPIP Little Creek across the whole catchment, to achieve a fairer distribution of the cost of stormwater quality works.
- 15 BCC include in CP21 the stormwater quality contribution rates in the MPIP and MPP for all developable land, as relevant.

¹⁵³ Practice Note, p 3.

In assessing apportionment of stormwater costs in CP21, we have taken into account:

- ▼ the demand for infrastructure in the plan, arising from the expected development inside and outside MPP and MPIP
- ▼ the capacity of existing infrastructure and the needs of the existing population, and
- ▼ the demand generated by different types of development that will occur in the precincts.

4.6.1 Apportionment of stormwater management costs in CP21

The apportionment approach for stormwater management costs described in CP21 encompasses the steps outlined in Box 4.4.

Box 4.4 Approach to apportionment of stormwater management costs in CP21

1. Stormwater management costs are separated into stormwater quantity and stormwater quality works costs.
2. Stormwater quantity works costs are separated by the main drainage catchments in each precinct, as follows:
 - ▼ three main drainage catchments in the MPIP: Bells Creek, Marsden Creek and Little Creek, and
 - ▼ four main drainage catchments in the MPP: Bells Creek, Marsden Creek, Little Creek and South Creek
3. Stormwater quality works costs are separated as follows:
 - ▼ seven stormwater quality sub-catchments in the MPIP, and
 - ▼ four stormwater quality catchments in the MPP (aligned with drainage catchments).
4. Stormwater quality costs in each sub-catchment are intended to be apportioned to account for the different demand for stormwater quality measures from low density residential land and other developable land, as follows:
 - ▼ 100% of low density residential land
 - ▼ 15% of other developable land in the MPIP, and
 - ▼ 25% of other developable land in the MPP.

BCC explains that demand for stormwater quality management in CP21 varies depending on land use, as follows:

- ▼ for low density residential land use (zoned R2), stormwater quality treatment measures are required on a regional scale as it is not practical to provide this on individual lots, and
- ▼ for higher density residential, commercial and industrial land uses (zoned R3, B5, B7 IN1 and IN2), stormwater treatment measures will be provided on lot as part of the conditions of development consent, with minor additional regional measures to treat stormwater from precinct roads that are not serviced by on-lot stormwater treatment measures.

Source: CP21 pp 14-15, Appendix A1 to A13, Appendix C1 to C15; and BCC, Email to IPART, 21 April 2017.

The separation of CP21 into drainage and stormwater quality catchments and the corresponding contribution rates are shown in Table 4.13.

Table 4.13 Drainage and stormwater quality catchments and contribution rates in CP21-2016 (\$June 2016)

Drainage catchment	Stormwater quantity contribution rate per ha	Stormwater quality catchment	Stormwater quality contribution rate per ha
MPIP Bells Creek	\$403,923	Bells Creek SWQ1	\$31,291
		Bells Creek SWQ2	\$103,402
MPIP Marsden Creek	\$573,620	Marsden Creek SWQ3	\$42,879
MPIP Little Creek	\$501,716	Little Creek SWQ4	\$76,328
		Little Creek SWQ5	\$7,828
		Little Creek SWQ6	\$21,862
		Little Creek SWQ7	\$253,582
MPP Bells Creek	\$639,594	Bells Creek SWQ8	\$95,194
MPP Marsden Creek	\$775,755	Marsden Creek SWQ9	\$115,144
MPP Little Creek	\$354,656	Little Creek SWQ10	\$47,808
MPP South Creek	\$278,362	South Creek SWQ11	\$27,572

Source: CP21, p 84.

4.6.2 Our assessment of BCC's apportionment approach for stormwater costs

We consider that BCC's approach to the apportionment of stormwater quantity costs on the basis of the main drainage catchments is reasonable. We also consider that the apportionment of stormwater quality costs to account for the different demand arising from different land use types is reasonable, whereby 100% of low density residential land is allocated costs compared with 15% and 25% of other developable land in the MPIP and MPP respectively.

However, we have identified two issues related to the apportionment of stormwater quality management costs in CP21:

- ▼ The division of MPIP Little Creek and Bells Creek into sub-catchments does not reflect the stormwater quality treatment approach in these catchments and therefore results in an unfair distribution of costs to developments.
- ▼ The contribution rates applying to stormwater quality in the MPP for 'other developable land' are not transparent, in so far as further calculation is required to determine the contributions for some categories of land.

We note that CP21-2012 also adopted a similar apportionment approach for stormwater quality costs in the MPIP Bells Creek and MPIP Little Creek catchments. However BCC has revised its stormwater quality management treatment strategy in these drainage catchments in CP21-2016.

For the **MPIP Little Creek catchment**, we consider that dividing the catchment into smaller sub-catchments for the purposes of apportioning stormwater quality costs is no longer reasonable because BCC has adopted a whole-of-catchment approach to managing stormwater quality. We consider that BCC should apportion stormwater quality costs across the entire MPIP Little Creek catchment to reflect its water quality treatment strategy.

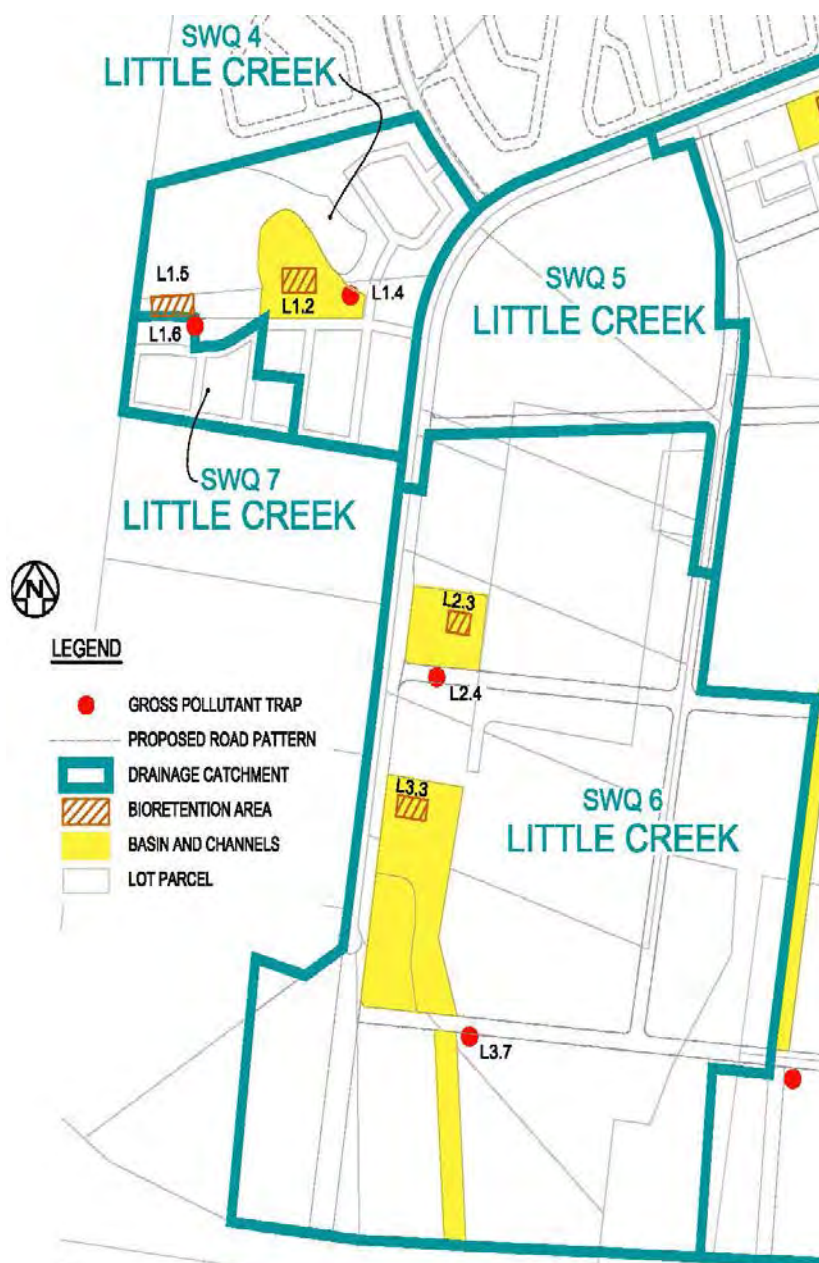
For the **MPIP Bells Creek catchment**, BCC's revised water quality treatment strategy is based on a north-south division of the catchment. This concentration of facilities in the northern and southern areas of the catchment does not align with the division of the catchment for cost apportionment purposes, which is done on the basis of low density residential land (SWQ2) and other developable land (SWQ1). However, we do not recommend any change to the apportionment approach for stormwater quality costs in MPIP Bells Creek at this stage of the contributions plan as all contributions have already been collected in one sub-catchment and altering the apportionment approach would likely affect BCC's revenue.

We have explained this further below in relation to each drainage catchment.

Stormwater quality management in MPIP Little Creek

The location of stormwater quality facilities in the MPIP Little Creek catchment is shown in Figure 4.3. The contribution rates per hectare and the development types in MPIP Little Creek corresponding to each stormwater quality catchment are shown at Table 4.14.

Figure 4.3 MPIP Little Creek stormwater quality catchments SWQ4 - SWQ7



Source: CP21, p 54.

Table 4.14 MPIP Little Creek stormwater quality catchments and contribution rates (\$June 2016)

Stormwater quality catchment	Development type	Contribution rate per ha
MPIP Little Creek SWQ4	Residential	\$76,328
MPIP Little Creek SWQ5	Other developable land (B7, IN1)	\$7,828
MPIP Little Creek SWQ6	Other developable land (IN1, IN2)	\$21,862
MPIP Little Creek SWQ7	Residential	\$253,582

Source: CP21, p 84; and BCC, Email to IPART, 21 April 2017.

Note: CP21 assumes that residential land in SWQ4 and SWQ7 catchments has a density of 28 dwellings per hectare. BCC advised (on 21 April 2017) that all the residential development is zoned R2 in these catchments.

BCC's revised stormwater quality treatment approach for the MPIP Little Creek catchment in CP21-2016 is outlined in Box 4.5.

Box 4.5 Revised stormwater quality treatment approach – MPIP Little Creek

In CP21-2016, MPIP Little Creek is divided into four stormwater quality catchments whereas in CP21-2012, it was divided into only three. SWQ7 is a new water quality catchment in CP21-2016 that did not appear in CP21-2012, where it was combined with SWQ4.

At section 4.3.2 we outlined how BCC has amended its stormwater quantity and quality facilities in the MPIP Little Creek Catchment to take an integrated approach to the management of stormwater quantity and quality from development to achieve ideal outcomes that protect the TLC. With stormwater facilities now designed for the catchment-wide purpose, the division of MPIP Little Creek into four separate stormwater quality sub-catchments for the purpose of apportioning costs does not align with the revised stormwater quality treatment approach. This division creates unnecessary complexity and results in a distribution of costs that does not reflect demand.

The apportionment approach outlined in CP21 accounts for the different demand for stormwater quality measures arising from different land uses by apportioning stormwater quality costs over 100% of low density residential land and over 15% of other developable land in the MPIP. Therefore, BCC's isolation of low density residential land with the separate sub-catchments for the purposes of apportionment of stormwater quality costs is unnecessary.

Applying the apportionment approach for stormwater quality costs described in CP21 across the MPIP Little Creek catchment gives the following IPART-assessed contribution rates:

- ▼ \$113,557 per hectare for residential land, and
- ▼ \$17,034 per hectare for other developable land..¹⁵⁴

We recommend that BCC apportion stormwater quality costs in the MPIP Little Creek across the entire drainage catchment and include the corresponding contribution rates in CP21 for residential land and other developable land within this catchment.

In response to our draft report, BCC contended that the apportionment approach for the MPIP Little Creek should remain "as is" on the basis that:

- ▼ the application of CP21 to calculate charges for development consents is very complex
- ▼ adopting a different apportionment approach in the MPIP Little Creek from the approach in the MPIP Marsden Creek and MPIP Bells Creek catchments has the potential to lead to calculation errors, and
- ▼ as consents for half the low density residential developments in the catchment have already been granted, a change will have little effect..¹⁵⁵

¹⁵⁴ These are indicative estimates only. The final impact on rates will depend on the outcome from a range of our recommendations, including any reapportionment of stormwater and transport costs and whether public school land is included in the NDA for the purposes of calculating contributions.

¹⁵⁵ BCC, Comments on draft report, 28 July 2017, p 6.

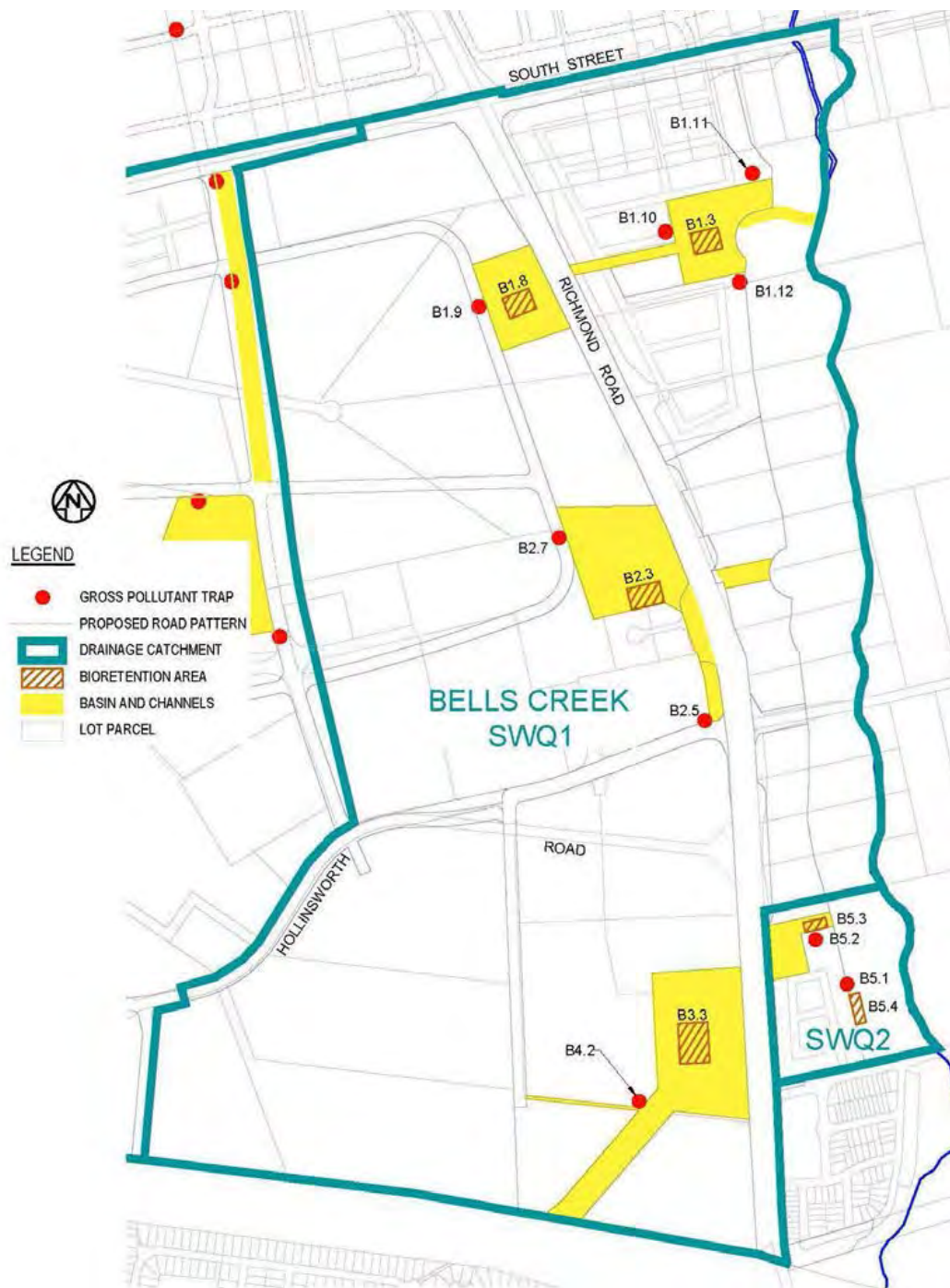
We agree the calculation of development contributions for CP21 is very complex and note that some of this complexity arises from the apportionment approach for stormwater costs that BCC has adopted. We note that the apportionment approach we have recommended is relatively consistent with the number of rates for MPIP Marsden Creek, where there is also one rate for residential land and one for other developable land.

BCC included a new stormwater quality catchment (SWQ7) in CP21-2016 that does not reflect its stormwater quality treatment approach in the MPIP Little Creek. The difference in stormwater quality contributions between the two residential catchments in MPIP Little Creek is significant (see Table 4.14) and we consider this difference is not justified because it is not related to a difference in demand for the stormwater quality infrastructure. Our recommendation should result in a more equitable outcome for the stormwater quality contributions paid for land within the current SWQ7 stormwater quality catchment.

Stormwater quality management in MPIP Bells Creek

Figure 4.4 shows the location of stormwater quality facilities in the MPIP Bells Creek catchment and the two sub-catchments, SWQ1 and SWQ2, for the purposes of apportioning costs to developments. The contribution rate per hectare in SWQ1 is \$31,291, and in SWQ2 is \$103,402. SWQ2 includes only land zoned low density residential (R2); SWQ1 includes other developable land (zoned R3, B5, B7 and IN2).

Figure 4.4 MPIP Bells Creek stormwater quality catchments SWQ1 and SWQ2



Source: CP21-2016, p 46.

BCC's revised stormwater quality treatment approach for the MPIP Bells Creek catchment in CP21-2016 is outlined in Box 4.6.

Box 4.6 Revised stormwater quality treatment approach – MPIP Bells Creek

The stormwater quality works items in SWQ2 and the south-eastern corner of SWQ1 have been revised in CP21-2016, reflecting a different strategy for managing stormwater quality in this area.

BCC explained that it reviewed the water quality modelling for the design of the proposed development on the eastern side of Richmond Rd and found that it was more efficient to treat the whole development area (SWQ2 and the south-eastern corner of SWQ1) rather than bypass SWQ2 and make the remaining facilities in SWQ1 treat higher pollutant loads.

BCC found that by including raingardens B5.3 and B5.4, the size of raingarden B3.3 (on the western side of Richmond Rd) could be reduced. Overall, the quantum of treatment area has been reduced from 6,533m² in CP21-2012^a to 2,160m² in CP21-2016^b. This is a reduction of 4,373m². There has also been a corresponding reduction in costs for the raingardens from approximately \$2.7 million to \$0.8 million.

^a B3.3 (6,000m²) + B5.1 (533m²).

^b B5.3 (110m²) + B5.4 (250m²) + B3.3 (1,800m²).

Source: BCC, Email to IPART, 15 March 2017.

This revised treatment approach for stormwater quality in MPIP Bells Creek in CP21-2016 is reasonable and more cost efficient than the proposed configuration of stormwater quality items in CP21-2012. However, the isolation of SWQ2 for the purposes of apportionment of costs does not align with the revised stormwater quality treatment approach. A north-south division of the MPIP Bells Creek that reflects BCC's water quality treatment approach and configuration of infrastructure would better reflect demand than the current division according to low density residential and other developable land.

However, BCC has advised that contributions have been collected for all the low density residential land in SWQ2. Therefore, changing the apportionment approach for stormwater quality costs in the MPIP Bells Creek at this stage would likely affect BCC's revenue. In light of collected contributions in this catchment, we do not recommend any change to the proposed apportionment approach.

Improving the transparency of stormwater quality contribution rates for 'other developable land' in the MPP

As outlined above, to account for the different demand arising from stormwater quality measures for low density residential land and other development land in the MPP, BCC has proposed to apportion costs over:

- ▼ 100% of low density residential land, and
- ▼ 25% of other developable land..¹⁵⁶

The contribution rates for stormwater quality in the MPP are set out in Appendix I of CP21 and shown in Table 4.15.

¹⁵⁶ CP21, pp 14-15.

Table 4.15 Contribution rates for MPP stormwater quality (\$June 2016)

Catchment	Contribution rate (\$ per ha)
MPP Bells Creek – SWQ8	\$95,194
MPP Marsden Creek – SWQ9	\$115,144
MPP Little Creek – SWQ10	\$47,808
MPP South Creek – SWQ11	\$27,572

Source: CP21, Appendix I, p 84.

While these contribution rates are accurate for low density residential land, for which BCC proposes to apportion costs to 100% of the land, they do not accurately reflect the contribution rate for other developable land for which BCC proposes to apportion costs to 25% of the land.

To improve the transparency of the contribution rates applying to all relevant development types in CP21, we recommend that BCC include the stormwater quality contribution rates in the MPP for both low density residential land and for other developable land. These rates, adjusted for our recommended cost reductions to stormwater quality works, are shown in Table 4.16. BCC should also take this approach for the MPIP Little Creek once it has combined the catchment.

Table 4.16 Adjusted contribution rates for MPP stormwater quality (\$June 2016)

Catchment	Low density residential contribution rate (\$ per ha)	Other developable land contribution rate (\$ per ha)
MPP Bells Creek – SWQ8	\$84,928	\$21,232
MPP Marsden Creek – SWQ9	\$110,924	\$27,731
MPP Little Creek – SWQ10	\$40,013	\$10,003
MPP South Creek – SWQ11	\$35,146	\$8,786

Source: CP21 Schedule of Rates and IPART calculations.

In response to our draft report, BCC contended that this recommendation would lead to an additional eight contribution rates in CP21 and is reluctant to add more.¹⁵⁷ However, this recommendation is not about creating additional rates; it is about providing transparency around existing rates that BCC should already be charging but that are not actually presented in the version of CP21 we assessed. This recommendation should not create an administrative burden on BCC or lead to calculation errors if BCC is correctly applying the apportionment approach it has proposed in CP21.

To address its concerns about complexity and administrative burdens, BCC may wish to review its apportionment approach for stormwater quality costs in CP21 and further consolidate the stormwater quality catchments.

¹⁵⁷ BCC, Response to IPART's Draft Report, 28 July 2017, p 6.

5 Assessment of CP21 – open space facilities

This chapter examines the provision for open space facilities in CP21 against the criteria in the Practice Note. Table 5.1 sets out the summary of our assessment.

Table 5.1 Summary of IPART’s assessment of open space land and facilities in CP21

Criterion	Finding	Recommendation	Cost adjustment (\$June 2016)
Essential Works List	All items are on the EWL, except for landscaping ‘type 3’	Remove the cost of ‘type 3’ landscaping work	-\$6.0m
	Land only costs for community use is consistent with the EWL		
Nexus	Nexus established for all items	Review works to be provided on land with transmission easements	
Reasonable cost	Cost of remediation of former tip site is reasonable		
	The cost for open space infrastructure is high	Review costs of all items of open space infrastructure	
	The cost of some specific items of infrastructure is excessive	Pending outcome of recommended review, remove costs of playing fields, amenities buildings, tennis courts, car parking, landscaping and youth recreation facility	-\$112.0m
		Remove extra costs for plans of management already covered by the design fee	-\$0.05m
	BCC’s revised land costs are reasonable except for:	The cost of land for Reserve 1002 should be adjusted to reflect the extent of the land’s constraints	-\$11.8m
		BCC should adopt its revised land costs	-\$33.4m
Apportionment	Approach is reasonable		
Total IPART recommended cost adjustment			-\$163.3

The proposed cost for open space in CP21 is \$323.1 million (33% of total costs), divided between works costs of \$174.3 million and land costs of \$148.8 million. CP21 includes 18 reserves within the catchment and the costs apportioned to Marsden Park of the centralised netball competition venue at Schofields, combined precinct located outside Marsden Park.

5.1 Criterion 1: Essential Works List for open space

IPART must assess whether a plan includes open space land and base level embellishment items consistent with ‘essential works’ in the Practice Note.

IPART finding

17 The land and embellishment of open space in CP21 are consistent with the Essential Works List, except for:

- the landscaping ‘type 3’ work which predominantly forms environmental, bush regeneration work.

Recommendation

16 BCC remove \$5,963,123 for the cost of landscaping ‘type 3’ work from CP21.

Table 5.2 sets out the different categories of land for open space and the types of embellishment proposed in CP21.

Table 5.2 Open space land and embellishment in CP21

Open space land	Embellishment in CP21
Active reserves	Playing fields, netball and tennis courts Lighting for playing fields and courts Amenities buildings and carparks Exercise trail and lookout/pavilion Local playgrounds and youth recreation facilities (including skate area) Picnic and BBQ areas Seating, pathways and cycleways Boundary fencing and landscaping
Local parks	Local playgrounds, picnic areas Seating, pathways and cycleways Boundary fencing and landscaping
Reserves subject to transmission easements	Pathways and cycleways Boundary fencing and landscaping (except landscaping ‘type 3’)
Open space co-located with stormwater management facilities	Seating, pathways, cycleway and landscaping
Combined netball facility in the Schofields precinct	Courts with lighting, amenities buildings, carpark Other facilities as for active reserves
Former Grange Avenue landfill site	Remediation Embellishment as for active reserves, except landscaping ‘type 3’
E2 Conservation zone (combined precinct facility)	Recreational facilities to be determined by BCC

Source: CP21, pp 26-28, and Worksheet MP+MPIP open space costing – Adoption 2016.

We consider that all the land for open space, and the items of open space embellishment in CP21 are consistent with the EWL, except for one item of work.

We determined landscaping ‘type 3’ to be bushland regeneration environmental works, and therefore, not compliant with the Practice Note. We recommend costs for this embellishment be removed from CP21.

We also investigated whether two items – a youth recreation facility and a lookout/pavilion – were consistent with base level embellishment, and concluded that they were, based on the scope of works provided. The remediation of the former Grange Avenue landfill site is similarly within the definition of base level embellishment because it is preparing the site for the proposed active recreational facilities.

5.1.1 Landscaping ‘type 3’ work is non-essential bushland regeneration

CP21 includes provision of \$6.0 million for work termed landscaping ‘type 3’ which is described as mass planting (natives). The cost rate for this work provides for riparian planting (including plant supply/installation, jute matting, rock armouring, extra for trees and trickle irrigation). In the CP21 work schedule, a separate item for bush regeneration has the same scope of work and cost rate, although there are no costs allocated to this item.

The Practice Note excludes bushland regeneration work for an environmental purpose, unless it serves a dual purpose with another category of essential infrastructure.¹⁵⁸ In this case it would be open space. However, we consider that such planting would effectively reduce the usability of the area as open space, and therefore its capacity to serve a dual purpose.

We also found that access to the open space by the public is limited in the areas of reserves where ‘type 3’ landscaping is proposed:

- ▼ Most ‘type 3’ landscaping (2.9ha or 25%) is in Reserve 993, which also contains transmission easement land and stormwater management land (channel ML 1.20). The landscaping around the water course is within a riparian zone, which also exceeds the definition of base level embellishment.
- ▼ ‘Type 3’ landscaping is also proposed for 1.3ha on Reserve 1006 (or 2%). The precise location is not identifiable in the plan, but it is likely to be associated with two bio retention areas, which would limit public access.

In response to our draft report, BCC proposed that the quantity of ‘type 3’ works be reclassified as type 1 landscaping work so that the area could be used for passive recreation, as well as enhancing biodiversity and improving site aesthetics.¹⁵⁹ We do not agree with this proposal because the nature of the work as bushland regeneration is the same, and it is not reasonable to partially fund ‘non-essential’ embellishment by including it within a different category.

We therefore recommend the full cost of landscaping ‘type 3’ work be removed from the plan, which would reduce its cost by \$6.0 million.¹⁶⁰

¹⁵⁸ Practice Note, p 10.

¹⁵⁹ BCC, Response to report draft, 28 July 2017, pp 6-7.

¹⁶⁰ The amount of \$6.0 million is the actual cost in the plan for this work. The costing methodology in CP21 is to take the estimated costs using December 2012 dollars, add 10% for design fees, and then index this amount to June 2016 dollars.

5.1.2 Youth recreation facility work items are base level embellishment

CP21 includes a provision for two youth recreation facilities as passive open space, one each in Reserves 999 and 1006..¹⁶¹

BCC initially advised that specific facilities will be determined by community consultation, but may include “multipurpose courts, kick about space, outdoor ping pong tables, picnic settings with chess, seating and landscaping”..¹⁶² We agree with the council that these suggested components are consistent with base level embellishment in the EWL.

In the revised costings that BCC provided IPART in response to the draft report, BCC included further estimates for construction of a multi-play unit with practice walls (area of 450m²) in each reserve..¹⁶³ This work remains consistent with the EWL. However, we have found the proposed overall cost for youth recreation facilities in the revised costings to be unreasonable (see section 5.3).

5.1.3 Lookout/Pavilion is base level embellishment

Another item which could exceed the definition of base level embellishment is the lookout/pavilion in Reserve 1006. This is intended to be a 30m² pedestrian timber deck with fencing rails and is costed at \$107,118.

Although a “lookout” is not specified as base level embellishment in the Practice Note, we consider that, as proposed, it could meet the definition of “basic park structures and equipment”.

5.1.4 Remediation of the former landfill site in Reserve 1006 is essential work

CP21 is the first contributions plan we have assessed to include such a cost item.

In principle, we consider that the cost of remediating the former landfill site falls within the EWL, as it is consistent with the definition of base level embellishment in the Practice Note ie, “work required to bring the open space up to a level where the site is secure and suitable for passive or active recreation”.

BCC has not included in CP21 the cost of any land for the 48.8ha of Reserve 1006 which the council has owned since it resumed the property for use as a tip in 1974..¹⁶⁴ This represents a saving to costs in the plan.

¹⁶¹ The areas are 275m² and 550m². Based on a rate of \$2,618/m², the estimated costs are \$0.72 million and \$1.44 million respectively. The cost is considered in relation to criterion 3, reasonable costs, in section 5.3.4.

¹⁶² BCC, Response to IPART, 6 March 2017, pp 7-8.

¹⁶³ BCC’s revised costings also include estimates to construct an outdoor ping pong table, outdoor chess table and seat, and a kick about area, which we also consider would be consistent with the EWL: see Open Space BCC, Response to IPART’s Draft Report, 28 July 2017, and Attachment Open Space latest QS rates Comparison – CP21, Tabs Youth facilities 1 and 2.

¹⁶⁴ See [1999] NSWCA 139 para 5.

5.2 Criterion 2: Nexus for open space

In assessing the nexus for open space infrastructure in CP21, we considered whether the area to be acquired and the specific facilities to be provided are appropriate to meet the demand arising from new development within Marsden Park.

We found that nexus has been established for the land allocated for open space facilities in CP21, as well as for the open space embellishment proposed.

IPART finding

- 18 Nexus has been established for the proposed open space in CP21, noting the constraints of the land, and that additional open space appears to be needed for the higher projected population for the precinct.

Recommendations

- 17 BCC review the extent of embellishment of open space land subject to transmission easements, particularly the assumed extent of landscaping needs.
- 18 BCC investigate opportunities for additional open space in the Marsden Park and surrounding precincts to cater for the needs of the higher projected population, including using more stormwater land for open space, and sharing facilities with schools.

Recreation and open space facilities in CP21 reflect the recommendations in a number of studies, including several BCC plans or strategies such as its 2009 *Recreation and Open Space Strategy*.¹⁶⁵ The range and number of facilities are primarily based on two technical studies prepared for precinct planning:

- ▼ Elton Consulting, *Community Facilities and Open Space Assessment – Marsden Park Industrial Precinct*, July 2009 (Elton study), and
- ▼ MacroPlan Australia, *Community Facilities and Open Space Assessment – Marsden Park*, April 2012, (MacroPlan 2012).

5.2.1 Potential need for additional open space, given higher population estimate

The Indicative Layout Plan (ILP) for Marsden Park zones 109.64 hectares of land for public recreation (RE1). This indicates a rate of provision of land for open space of 3.25ha/1,000 residents, which exceeds the Growth Centres Commission's 2.83ha/1,000 benchmark (which would require around 90 hectares of land). These rates are based on the assumptions in CP21 of a residential population of around 33,750.

The 2016 Open Space Audit by GHD for the North West Priority Growth Area prepared for DPE as part of its major review of the original Growth Centres Commission planning of the North West Growth Centre indicates that the population to be accommodated in the Marsden Park precincts will be approximately 44,700, 32% higher than the plan's

¹⁶⁵ CP21, p 26 and Appendix J.

estimate..¹⁶⁶ GHD also found that there would be a shortfall in the provision of local parks for this expected population such that the additional residents could generate demand for two more local parks and other sporting facilities.

MacroPlan (in its open space assessment for Marsden Park) noted that the Growth Centres Commission standard 2.83ha/1,000 benchmark is a quantitative standard only, and its application must have regard to the quality of the open space offering and its accessibility to the dwellings it is intended to serve..¹⁶⁷

We estimate that approximately 27% of the land identified as open space and zoned RE1 (public recreation) does not offer unrestricted use for passive recreation. This is mostly land subject to transmission easements and existing native vegetation, which limits its ability to be used as open space (Box 5.1).

¹⁶⁶ See GHD, *Department of Planning and Environment – Priority Growth Areas – Open Space Audit – North West Area*, April 2016, p 39. The increases are based on modelling in *Priority Growth Areas: NWGC Housing Market Needs Analysis*, AEC Group (2015) which was used as the basis for higher densities to be incorporated in the Growth Centres SEPP. See section 8.3 for a detailed discussion of population increases.

¹⁶⁷ MacroPlan 2012, p 35.

Box 5.1 Constraints on land zoned for open space in CP21 – transmission easements and native vegetation

Transmission easements

Approximately 18ha (around 16%) of land zoned RE1 is located under transmission easements.^a

A statutory approval process applies to all application for development on such land, and TransGrid guidelines apply for the purposes of risk management and effective operational maintenance. The guidelines specify that:

- ▼ public spaces or recreational activities which encourage people to spend time within or congregate within the easement are prohibited, but
- ▼ cycleways, walking tracks and footpaths on the outer part of the easement or as a thoroughfare across it may be permitted, subject to horizontal and vertical clearances.^b

While we recognise that its use as open space is restricted to some extent, we consider that it should not be excluded when assessing the rate of provision of open space in CP21. To comply with TransGrid's guidelines, it can be used for some passive recreational activities, such as walking and cycling, but not for uses such as playgrounds or sports fields.

BCC is making appropriate use of transmission easement land as CP21 provides for the construction of pathways and one cycleway.

Native vegetation

Around 10% (11.27ha) of land zoned for public recreation is protected as part of the biodiversity certification for existing native vegetation in the Growth Centres.^c On such land, only development for the purpose of eradicating noxious weeds can be completed without consent from the Office of Environment and Heritage (OEH).^d More intensive recreational uses, even for passive activities such as playgrounds, dog exercising and bike tracks, would not be permitted.

^a BCC, *Response to Information Request*, April 2017.

^b See *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) and TransGrid Easement Guidelines at <https://www.transgrid.com.au/being-responsible/public-safety/living-and-working-with-powerlines/Documents/Easement%20guidelines%20for%20third%20party%20developers.pdf>.

^c DPE, *Growth Centres Biodiversity Certification Assessment of Consistency between Relevant Biodiversity Measures of the Biodiversity Certification Order and Marsden Park Precinct*, September 2013, p 5.

^d DPE, *Post-exhibition planning report State Environmental Planning Policy (Sydney Region Growth Centres) Review of Environment Conservation and Public Recreation-Regional Zones*, August 2013.

At the originally assumed population, CP21 exceeds the Growth Centres Commission benchmark for open space provision. When applying the higher population projections, CP21 falls below the benchmark for open space provision, with a rate of provision of 2.46ha/1000. This is compounded because much of the open space is constrained in its ability to be used as open space. Therefore, additional open space is needed to cater for the residents.

Options for additional open space

We recommend that BCC should investigate cost-effective options for additional space to meet the needs of the higher population.

We have previously recommended that stormwater land can serve a dual role as passive open space..¹⁶⁸ Much of the open space land in CP21 appears to be located on stormwater or flood affected land. We have estimated that an additional 3.6 hectares of stormwater land could also serve a passive open space function based on the useability of the land and its proximity to residential development. Should this land be included, based on the updated population, the rate of provision would be 2.54ha/1000 residents.

We also recommend BCC investigate the option of using school space to meet community open space needs. BCC previously investigated the possibility of shared use of educational facilities to provide open space in the development of the Schofields contributions plan..¹⁶⁹

In its open space audit, GHD noted that there were three schools proposed in the MPP. It recommended that “arrangements should be made to allow for the shared use of facilities within these schools”, which would particularly help address the shortfall in hardcourt facilities. Such shared use of school facilities is consistent with the State Infrastructure Strategy which recommended greater use of these facilities out of schools hours including the “co-use of open space”..¹⁷⁰ The shared use of facilities would provide an opportunity to meet some of the open space requirements for the MPP and MPIP.

Once BCC’s broader review of the South Creek catchment stormwater management is completed, some land to be acquired for basins could be repurposed for open space land if it is in a suitable location.

Lastly, there is scope to meet some of the needs through open space facilities external to the precincts eg, netball courts are being delivered at a centralised venue in Schofields. The precinct planning process in West Schofields and Marsden Park North provides BCC an opportunity to consider additional open space outside of the precincts.

We acknowledge that BCC is concerned about the shortfall of open space in CP21. In response to the draft report, it indicated that it would work with DPE as foreshadowed in the recently released draft *Land Use and Infrastructure Implementation Plan* to address shortfalls in open space provisions throughout the North West Priority Growth Area as a result of the higher projected population..¹⁷¹

5.2.2 Extent of landscaping of transmission easements requires review by BCC

In CP21, BCC has assumed that a blanket 50% of all transmission easement reserves will be landscaped (ie, by site clearing and turfing or mulching/planting) which might not take into account that its use by residents for open space purposes will be constrained.

We recommend that BCC prepare more site-specific plans for works on transmission easement land, and review the extent of embellishment, particularly of landscaping areas but also the length of pathways and cycleways, specific to the needs of each site. We do not

¹⁶⁸ See IPART, *Assessment of Blacktown City Council’s Section 94 Contributions Plan No 20 – Riverstone & Alex Ave*, July 2016, p 29; IPART, *Assessment of The Hills Shire Council’s Section 94 Contributions Plan No. 15 – Box Hill Precinct*, March 2016, p 8.

¹⁶⁹ IPART, *Assessment of Blacktown City Council’s Draft Section 94 Contributions Plan No 24 – Schofields Precinct*, August 2014, p 32. See IPART website

¹⁷⁰ Infrastructure NSW, *State Infrastructure Strategy*, October 2012, p 178.

¹⁷¹ BCC, Response to IPART’s Draft Report, 28 July 2017, pp 7-8, and see section 8.3.

consider that the proposed cost of landscaping of open space more generally in CP21 is reasonable (section 5.3.3) and a review of the extent of landscaping needs on the transmission land could occur as part of a full review of the landscaping needs and costs by BCC.

In response to our draft report, BCC commented how it intended to make this restricted land as useable for passive recreation as possible, and that landscaping, and paths are appropriate treatments to this end.¹⁷² We maintain that site-specific plans should be prepared to reflect how the current state of the land (eg, types of vegetation) can be most cost-efficiently modified to support passive uses. BCC's assumption that trees and groundcover or shrubs would cover 50% of these reserves has been retained, effectively preventing any passive use by residents of half of each transmission easement reserve.¹⁷³

5.2.3 Provision of recreational open space facilities

We consider that the rates of provision of specific recreational facilities (sporting fields, courts for netball and tennis, and local playgrounds) are reasonable as they are broadly consistent with recognised benchmarks for the current population and the recommendations in the technical studies (see Table 5.3).

We note that the rates of provision for active open space facilities in CP21 are slightly lower than the recommendations in the Elton Study and MacroPlan 2012. GHD's open space audit has identified a need for at least two more local parks and other sporting facilities to meet the demand from the higher projected population. We note that the demand for specific facilities should be monitored by BCC and DPE, in light of any changing population needs.

¹⁷² BCC, Response to IPART's Draft Report, 28 July 2017, p 7.

¹⁷³ See discussion in section 5.3.2 below.

Table 5.3 Comparison of rate of provision of active open space facilities in technical studies and CP21

Facility	Elton study	MacroPlan 2012		CP21	
	Number	Number	Area (ha)	Number	Area (ha)
Sports fields (double)	9.3	8.7	34.82	8	14.8
Hard courts		17	8.5	16	
Basketball/ Netball	9.7	9.22	4.5	9 ^a	4.2
Tennis courts	8.5	8	4	7	4.9
Local aquatic facility		3.22	3	57% of precinct facility	3
District aquatic facility		0.8	1	0	N/A
Indoor sports court		1.26	2	0	N/A

^a Five of these courts are to be located in the Combined Precincts netball venue in Schofields Precinct.

Note: MacroPlan's assessment focused on the requirements for the new residents of MPP but scaled up its recommendations to include the needs of the additional 3,205 new residents of MPIP, a total of 32,205 people. Apportionment to Marsden Park of area of the Combined Precincts netball venue in Schofields Precinct is not included.

Source: Elton Consulting, *Community Facilities and Open Space Assessment – Marsden Park Industrial Precinct*, July 2009, p 32; MacroPlan, *Community Facilities and Open Space Assessment – Marsden Park*, April 2012, p 44; and CP21, Work Schedules.

5.3 Criterion 3: Reasonable open space facility costs

CP21 includes a total of \$174.3 million for the costs of open space works, which includes \$33 million for remediation of the former Grange Avenue landfill site.¹⁷⁴

We assessed whether the costs in the plan are reasonable by assessing the overall cost on a per person basis, the costing methodology used by BCC, and the cost estimates for specific items of embellishment.

IPART findings

- 19 The proposed cost for remediation of the former Grange Avenue landfill site is reasonable.
- 20 The cost of open space embellishment in CP21, based on indexation of estimates by a quantity surveyor in 2012, is higher than the reasonable costs in comparable plans IPART has recently reviewed.
- 21 Some of the costs in CP21 of open space facilities are reasonable, but costs for many of the items appear to be excessive and require revision (ie, costs for playing fields, amenities buildings, tennis courts, car parking, landscaping and the youth recreation facility).
- 22 The costs of embellishment of reserves 995, 997, 999, and 1001 are excessive as in each case the total area of embellishment exceeds the area of the reserve.
- 23 Additional costs for plans of management for the combined netball facility and remediation of Reserve 1006 are not reasonable because design (including project management) fees (10%) are already included in the cost estimates for the relevant works.

¹⁷⁴ CP21, Appendix H.

Recommendations

- 19 BCC undertake a review of the costs of all items of open space infrastructure to ensure the costs in CP21 are reasonable, based on up-to-date information, reflect the level of risk for the project stage, and more site-specific plans, where necessary.
- 20 Pending the outcome of the recommended review, BCC removes \$112,038,471 for the costs of the following facilities from CP21:
 - playing fields (\$27,501,399)
 - amenities buildings (\$12,013,084)
 - tennis courts (\$2,843,160)
 - car parking (\$10,254,705)
 - landscaping types 1 and 2 (\$57,266,300), and
 - youth recreation facilities (\$2,159,822).
- 21 BCC removes the additional costs for plans of management for the combined netball facility (\$39,885) and remediation of Reserve 1006 (\$6,232) from CP21.

We found that overall, the per person cost in CP21 exceeds the IPART-assessed rate in the other contribution plans for a greenfield area we have reviewed. We found that the main reason for the higher costs is that the cost estimates for a number of specific infrastructure items are unreasonably high when compared with costs in other plans, IPART benchmarks or published industry costs.

In response to a draft of our report, BCC submitted a revised set of costings for the range of open space embellishment items.¹⁷⁵ These costs are in June 2016 dollars and were prepared by Rider Levett Bucknall (RLB) Quantity Surveyors, in response to a request from the council. Applying these costs to the proposed embellishment in CP21, BCC calculated that the new embellishment estimates would increase costs by around 24% from \$174.3 million to \$215.6 million. BCC claims that this indicates the costs in CP21, as it originally submitted, are reasonable.

We considered in detail the revised costings provided by BCC, but found no basis for revising our findings or recommendations in relation to the reasonableness of open space embellishment costs. We found that the additional detail provided with the cost estimates provided evidence that the proposed level of embellishment exceeded the base level standard in some instances, many unit rates had increased far beyond the relevant price index, and underlying assumptions about the dimensions and or scope were inconsistent or lacked justification.

5.3.1 Comparative per person costs in contribution plans

We assessed the capital cost for open space facilities on a per person basis in CP21 against the costs in other plans submitted to IPART for review (Table 5.4). We excluded the cost of remediation of the former Grange Avenue landfill site in our calculation of CP21 costs.

¹⁷⁵ Open Space latest QS rates Comparison – CP21.

The proposed cost per person for CP21 is higher than the amount in any greenfield plan that we assessed as reasonable. The proposed cost of \$4,186 per person is, in real terms, 67% more than the IPART-assessed reasonable cost per person for BCC's own CP20, and more than the IPART-assessed costs in plans from other councils: CP15 from The Hills Shire Council (THSC) and West Dapto from Wollongong City Council.

Table 5.4 IPART-assessed reasonable capital cost for open space facilities per person (\$June 2016)

Contributions plan	Cost per person
Blacktown City Council, CP21 (as submitted, excluding remediation costs)	\$4,186
Wollongong City Council, West Dapto (2016)	\$673
Blacktown City Council, CP20 – Riverstone and Alex Avenue (2016)	\$2,513
The Hills Shire Council, CP15 – Box Hill (2016)	\$2,038
The Hills Shire Council, CP16 – Box Hill North (2015)	\$1,319
Blacktown City Council, CP24 – Schofields (2014)	\$2,755
Blacktown City Council, CP22 – Area 20 (2012)	\$3,248

Note: The capital costs in the various plans have all been adjusted to June 2016 dollars. Where IPART has assessed more than one version of the contributions plan, the most recent has been used (ie, CP21 2016 version, CP20 2015 version and CP15 2015 version).

Sources: CP21 and IPART reports: Assessment of Wollongong City Council's Draft West Dapto Section 94 Development Contributions Plan, October 2016; Assessment of Blacktown City Council's Section 94 Contributions Plan No 20 Riverstone and Alex Avenue Precinct, July 2016; Assessment of The Hills Shire Council's Section 94 Contributions Plan No 15 Box Hill Precinct, March 2016; Assessment of The Hills Shire Council's Section 94 Contributions Plan No 16 Box Hill North Precinct, September 2015; Assessment of Blacktown City Council's Draft Section 94 Contributions Plan No 24 Schofields Precinct, August 2014; Assessment of Blacktown City Council's Draft Section 94 Contributions Plan No 22 Area 20 Precinct, September 2012.

5.3.2 Need for BCC to review and update the open space embellishment cost estimates, including the contingency allowance if relevant

The open space embellishment costs in CP21 are based on estimates provided by a quantity surveyor (QS) in December 2012 for the scope of all the components required to deliver each item of infrastructure, and their unit costs.¹⁷⁶ The construction cost for each item also includes:

- ▼ 12% for preliminaries
- ▼ 4% for builders margin and overheads
- ▼ 10% design fees, and
- ▼ a 15% contingency allowance.

BCC indexed each cost to June 2016 using the Producer Price Index, Non Residential Building Construction, NSW (Non-residential building PPI), consistent with IPART's previous recommendations.¹⁷⁷

¹⁷⁶ Rates in CP21 are at December 2012 advised by WT Partnership. Costs in CP20 were based on September 2008 rates advised by Rider Levett Bucknall. In each case they were indexed to the relevant quarter when the plan was finalised.

¹⁷⁷ BCC, *Application for assessment of a section 94 contributions plan – Section 94 Contributions Plan No 21 – Marsden Park*, December 2016.

The approach, in principle, appears reasonable. We note, however, that the cost estimates are high level only, not site-specific, and incorporate a number of the council's assumptions about scope of aspects of the work needed. We found that the cost estimates are unreasonably high in the context of the work to be provided, and that there is no apparent reason for the much higher costs than the costs in other nearby precincts.

In light of our findings and that it has been five years since the basis for the costs in CP21 was established, it would be prudent for the council to review its overall approach to costing. Such regular reviews are contemplated by the Practice Note as general good practice. While the unit rates in BCC's revised costings are more up-to date, overall the revisions are not prepared on a site-specific basis, and maintain the costing approach and assumptions which we consider underpin the comparatively high embellishment costs in CP21.

The rates for indirect costs and contingencies are applied uniformly for each item, and the combined impact on base costs is within the range proposed in IPART's benchmark costs report.¹⁷⁸ However, we consider that in the context of reviewing the costs in CP21, BCC should revisit how it applies the contingency allowance to the works needed for open space infrastructure. BCC should consider the appropriate contingency allowance to reflect the stage of preparation for delivery of open space infrastructure for each reserve. Already BCC has reached agreement with developers, based on detailed site drawings and building specifications, to provide the full facilities in three reserves.

While we recognise that the priority in CP21 is to deliver transport and stormwater infrastructure, it is likely that similar agreements with developers will allow local parks and active reserves sooner than allowed for in CP21's delivery schedule. As a consequence, BCC will need to prepare site-specific plans and revise the costs of open space facilities in CP21. This approach would also ensure that any future agreements allowing developers to offset contributions against the costs of works are based on costs which are reasonable.

The cost of open space works in CP21 includes an amount for remediation of the former Grange Avenue landfill site, at the estimated cost of \$33 million. This amount is necessarily provisional, as it is derived from high-level estimates by a consultant of the cost of remediation in two different timeframes.¹⁷⁹ BCC can only update the estimated cost when more detailed investigation is undertaken.

One specific area for review that we identified is an apparent excessive embellishment of four reserves. We calculated that the area covered by facilities to be constructed plus the area of landscaping exceeds the total area of the reserve. This occurs in reserves 995, 997, 999, and 1001.

BCC should also review its assumption that in each reserve, 25% of the area would be type 1 landscaping and 25% would be type 2, and specify how much of these areas should be covered by turf. Although the revised 2016 costings provide a separate cost for turfing, it is only applied to a small area in two reserves. Reviewing assumptions for landscaping and basing estimates on site-specific plans should result in costs that are more reasonable.

¹⁷⁸ IPART, *Local Infrastructure Benchmark Costs*, April 2014.

¹⁷⁹ BCC, Business Paper Meeting of 7 December 2016, pp 5-6, and see Coffey Environments Australia, *Grange Closed Landfill, Marsden Park, NSW*, August 2015.

Revised costs of embellishment submitted by the council

We assessed the revised costings, comparing them with the costs in CP21 as submitted by the council. We do not accept these estimates provide a reasonable point of comparison with the costs of embellishment in CP21 as submitted because:

- ▼ While cost increases over four years for comparable items and standards of embellishment would be expected, changes to the costs of the 21 items were not consistent in direction or size, for various reasons noted below. Compared with the initial costings, six were lower, eight increased by up to 50%, five increased by between 50% and 100% and four increased by more than 100%.
- ▼ Changes in the real unit rates between 2012 and 2016 were inconsistent, and increases often were more than 100%.
- ▼ In many cases the revised costings show changes to dimensions and/or the scope and the number of component works needed to construct the items without apparent justification or any explanation. Some of the assumptions underpinning costs were also inconsistent, and there were significant unexplained increases to lump sum costs.
- ▼ Some standards of embellishment appear to exceed 'base level' as required by EWL, such as the fitness station (\$150,000 for static and dynamic equipment, increasing costs by 500% over the 2012 costs), and automatic gates for carparks.
- ▼ The revised costings are for the construction of generic items, and are not based on site-specific plans nor do they reflect the level of risk for the project stage as we propose in Recommendation 19.

We found no basis in the revised costings provided by BCC for amending our findings or recommendations about the reasonableness of open space costs in CP21. We do not accept BCC's contention that they indicate the costs in CP21 as submitted, are reasonable.

Using quantity surveyor cost estimates

IPART has indicated that in preparing costs in contributions plans, it is reasonable that councils rely on QS estimates. We acknowledge that in many cases, a QS can provide useful, market-based expertise to inform local infrastructure costs in a contributions plan. However this does not mean costs based on QS estimates will always be found to be reasonable. Advice from a QS can reflect the brief given by a council and any assumptions made by the council or the QS about scope, quality, or the circumstances of delivery.

For our assessment of CP21, we have the benefit of a range of comparative data from other contributions plans we have assessed to support our analysis of costs. We have also examined other information such as the assumptions underlying the cost and quantity estimates, and the scope of the works being costed. All this evidence has helped us to determine the reasonableness of the cost estimates provided by BCC from two different QS sources.

5.3.3 Specific embellishment item cost estimates that are high

We examined the comparative costs of specific items of infrastructure in CP21 to assess if they were reasonable, and to determine what may be driving the higher overall comparative costs in the plan.

We observed that the costs in CP21 for specific items were higher, and in some cases, considerably higher, than those in CP20 and CP15, as well as benchmark and industry costs. In particular, the costs of six items of embellishment work appear to be excessive and should be removed from the costs of the plan.

In determining that the costs of these items were not reasonable we compared them with the costs in two recent plans with very similar facilities and two industry-based costings. We adjusted for inclusions such as contingency allowances, and indexed each cost to June 2016 dollars.

The comparators we used are:

- ▼ Costs in CP15 (2015 version) which included detailed site-specific designs and costings for each reserve or park, prepared for THSC by Davis Langdon in February 2014 (assumed \$December 2013)..¹⁸⁰
- ▼ Costs in CP20 (2014 version) for a range of open space facilities that closely matched those in CP21, which were based on quantity surveyor estimates prepared for BCC in 2008 and indexed. Although prepared four years earlier than CP21's estimates, BCC continued to use them as the basis for the cost of open space facilities in its most recent revision of CP20 submitted for review in 2015..¹⁸¹
- ▼ Costs for open space items in IPART's benchmark report (\$June 2013)..¹⁸²
- ▼ Industry rates contained in Rawlinsons 2017 edition (\$December 2016)..¹⁸³

Our comparison of the costs is set out in Table 5.5, and our more detailed assessment of the cost of each of five items is in Box 5.2. We have set out our assessment of the youth recreation facility cost separately below.

¹⁸⁰ See CP15, p 20, Additional Information provided by council: AECOM (Davis Langdon), *Traffic Management and Open Space Strategic Design, Appendix C Order of Magnitude Cost Estimate*, February 2014.

¹⁸¹ IPART, *Assessment of Blacktown City Council's Section 94 Contributions Plan No 20, Riverstone and Alex Avenue Precinct*, march 2015.

¹⁸² IPART, *Local Infrastructure Benchmark Costs*, April 2014.

¹⁸³ Rawlinsons, *Australian Construction Handbook*, 2017.

Table 5.5 Comparative costs of items of open space infrastructure (\$June 2016)

Infrastructure item	CP21 (BCC)	CP20 (BCC)	CP15 (THSC)	IPART benchmark cost	Rawlinsons 2017 cost
Playing field, exclusive of lighting (per m ²)	170	102	134	62	115 ^a
Playing field lighting per set	288,533	222,981	213,267	320,899	
Playing field lighting (per m ²)	16	10	17	21	
Amenities building (GFA per m ²)	3,361	2,423	1,966	1,874	2,381
Tennis court with lighting (per m ²)	527	281 ^b	264	146	
Car parking (per m ²)	327	170	175		
Car parking (per space)	9,143	5,946		6,765	
Landscaping type 1 (per m ²)	77	46	57 ^c		
Landscaping type 2 (per m ²)	110	59	57		

a Inclusive of lighting.

b Exclusive of lighting.

c Average cost estimate by IPART.

Note: Costs exclude design fees (usually 10%) but include on-costs for builders' preliminaries and margins and contingencies.

Sources: See BCC, CP21; BCC, CP20; THSC, CP15; IPART, *Local Infrastructure Benchmark Costs*, April 2014; *Rawlinsons Australian Construction Handbook*, 2017; and IPART calculations.

5.3.4 Summary of our assessment of open space embellishment costs

In summary, our assessment found that the costs of a number of the embellishment items are excessive, and should be revised. As our comments above indicate, the revised costings provided by BCC in most cases were higher than the costs in the plan as submitted, and we found no basis for amending our recommendations to remove costs of six items and replace them with more reasonable costs.

We recommend that until BCC prepares more reasonable cost estimates, the following costs should be removed from CP21:

- ▼ playing fields (\$27.5 million)
- ▼ amenities buildings (\$12.0 million)
- ▼ tennis courts (\$2.8 million)
- ▼ car parking (\$10.3 million)
- ▼ landscaping types 1 and 2 (\$57.3 million), and
- ▼ youth recreation facilities (\$2.2 million).

A total of \$112 million costs is to be removed from the plan until BCC undertakes the review of overall costs of open space embellishment. An alternative could be to reduce open space costs by approximately 30%, based on benchmark costs, which amounts to a reduction of \$52 million.¹⁸⁴

¹⁸⁴ Based on using IPART benchmarks for amenities buildings, tennis courts, car parking; industry rates for playing fields, and CP20 costs for landscaping.

While we acknowledge that this would result in more reasonable costs for this infrastructure in CP21, we recommend that BCC review the costs of these open space items with a view to including more reasonable, site-specific cost estimates, where possible.

Box 5.2 IPART's assessment of open space infrastructure items in CP21 where costs are excessive

Playing fields

- ▼ CP21's playing field cost (exclusive of lights) is around 60% higher than the cost in CP20. The cost is also approximately 50% higher than the Rawlinsons estimate, when an allowance for lighting is included.

Amenities building

- ▼ BCC's proposed cost is 54% higher than the average cost of an amenities building across all comparators, and 36% above Rawlinsons cost, which is the highest alternative cost.
- ▼ We note that the gross floor area (GFA) used to estimate costs in CP21 is 50% larger than the 300m² building used in CP20. In CP15, the amenities buildings in two reserves are 450m², but only 375m² in the other four.
- ▼ The building plan and specification that BCC used as the basis for costing an amenities building (at \$1.46 million) has a GFA of only 290 m² and is to serve a playing field for NRL use. The building has provision for referees' changing rooms, and areas for administration and community use, which may exceed the level of facilities required for local-use playing fields in Marsden Park.

Tennis courts

- ▼ The square metre cost for a tennis court (\$527) exceeds the cost IPART has previously considered reasonable, being twice the cost in CP15 (\$264), and 88% above BCC's estimate of \$281 in CP20 (which excludes lighting).

Car parking

- ▼ The car parking costs in CP21 of \$327/m² or \$9,143 per space are significantly higher than their comparators on both measures. The costs are also around 85% higher than the QS-based, site-specific costings in THSC's CP15 (\$175 and \$5,075 respectively). The differential is also significant when comparing the costs in BCC's CP20 which are \$170 and \$5,946 respectively.

Landscaping

- ▼ Landscaping costs in CP21 of \$63.2 are a major driver of open space embellishment costs, being 45% of capital works/construction costs and 36% of the total open space facility costs (which includes \$33 million for remediation work).
- ▼ Landscaping costs are driven by the assumptions that provide for 50% of each reserve to be landscaped, and which in some reserves over-estimates the amount of residual area (ie, without specified facilities) that needs to be landscaped.
- ▼ Costs per square metre in CP21 exceed BCC's CP20 estimates by \$31 for type 1 and \$51 for type 2 landscaping.
- ▼ The allowance for herbicide/cultivation/topsoil has increased significantly from CP20 to CP21, without apparent justification.
- ▼ The costs for some comparable aspects of landscaping in CP21's stormwater work schedules are lower.
- ▼ We consider that applying margins and the contingency allowance at the same rates as for construction work (amounting to 34% of base costs, plus 10% for design fees) is likely to over-estimate the actual levels of cost and risk for landscaping work.

5.3.5 Cost of youth recreation facilities should be revised

CP21 includes provision in two reserves for youth recreation facilities, costed at \$2,159,822 (or \$2,423/m² (\$June 2016)). While we determined that such facilities would comply with base level embellishment (see section 5.1.2), we have also considered whether the costs in the plan are reasonable.

During our assessment, BCC advised that details of the facilities to be constructed will be determined by community consultation to establish what is needed, but may include multipurpose courts, kick about space, outdoor ping pong tables, picnic settings with chess, seating and landscaping, and that the assumed per square metre rate reflects only low-level embellishment.¹⁸⁵

Our analysis of the cost in CP21 as submitted indicated the per square metre rate was close to the IPART benchmark for an amenities building (\$1,874), and Rawlinsons rate of \$2,381 for a multi-purpose district community building.¹⁸⁶ Accordingly we proposed that the costs for youth recreation facilities be removed from the contribution plan until BCC could determine with greater certainty what would be constructed, and whether the type of embellishment complies with the essential works list, and propose costs that could be considered reasonable.

In response to our draft report, BCC then provided an updated costing for this facility of \$581,352 (or \$64/m²). This revised costing proposes a multi-play unit/practice wall facility which we consider would be base level embellishment in accordance with the EWL. In the absence of any benchmark for the cost of the proposed infrastructure, prima facie the cost of \$64/m² for youth recreation facilities appears reasonable.¹⁸⁷ However the cost (before allowances and contingencies) is made up of two items:

- ▼ \$150,000 each for two multi-play unit/practice walls (area of 450m²), which we consider is reasonable.
- ▼ \$284,000 per reserve for site preparation of an area of 10,000m², which we do not consider reasonable given that each multi-play unit/practice wall is only 450m².¹⁸⁸

Notwithstanding our view that a multi-play unit/practice wall is base level embellishment, we continue to recommend that BCC remove the cost of youth recreation facilities in CP21 and prepare new estimates of the overall cost of the item based on a more rigorous assessment of the actual scope of work required to install it.

5.3.6 Costs for plans of management are not reasonable as separate cost items

CP21 includes small costs for a plan of management for the combined precinct netball facility (\$6,232) and for remediation of the former Grange Avenue landfill site (\$39,885).

¹⁸⁵ BCC, Response to IPART, 6 March 2017.

¹⁸⁶ Costs indexed to June 2016. See Table 5.5.

¹⁸⁷ The revised costings also include estimates of \$965,124 to construct outdoor ping pong table, outdoor chess table and seat and a kick about area on two similar-sized sites. See Open Space latest QS rates Comparison – CP21.

¹⁸⁸ Open Space latest QS rates Comparison – CP21, Tabs Youth facilities 1 and 2.

The Work Schedule notes the plan of management for the centralised netball competition venue at Schofields is required "due to scale and number of courts in this Reserve". In IPART's assessment of BCC's contributions plan for the Schofields Precinct (2014), we found that a plan of management for the netball venue was not a reasonable cost because it should have already been covered by the allowance for design fees for the reserve.¹⁸⁹ Once again, we recommend the apportioned cost of the plan be removed from CP21 on the basis that it should be already covered by design (including project management) fees (10%) factored into the estimates.

A plan of management is also included to accompany the cost of remediation works at the landfill site. The \$33 million is a strategic review stage cost estimate for the remediation work based on the advice of Coffey (2015) and there is no detailed breakdown of the costs. Although a plan of management for the remediation works is a sensible undertaking, we consider the small cost above the \$33 million to be an unnecessary additional cost at this stage, and consider that it is likely that design (including project management) fees have been included in the overall cost estimate. We therefore recommend that cost also be removed from the plan. We note the council acknowledges that plans of management are not on the EWL. Nevertheless it recommends that they be retained in the costs of CP21, and will engage with DPE about including their costs in certain circumstances.

5.4 Criterion 3: Reasonable open space land costs

IPART finding

- 24 Consistent with Finding 5, the revised land acquisition cost for open space infrastructure is reasonable, except:
- the cost estimate for open space Reserve 1002 which assumes that all land is unconstrained (with an underlying zoning of R2) when 85% of the land is currently constrained.

Recommendation

- 22 BCC reduce the proposed cost of acquiring land for open space purposes in CP21 by \$45,704,004 to \$103,132,861, reflecting a decrease of \$33,393,000 for BCC's revised cost estimates and a further decrease of \$11,774,004 to acquire land for open space in Reserve 1002, based on the assumption that 85% of this land is constrained.

CP21 initially proposed a total of \$148.8 million to acquire land for open space. The council has still to acquire approximately 54.6 hectares,¹⁹⁰ at an estimated cost of \$146.2 million (or \$267.80/m²). Upon our request for additional land acquisition information as explained in section 3.5.1 in chapter 3, BCC proposed revised open space land costs of \$115.4 million. This reflected an average rate of \$191.35/m² for land yet to be acquired.

¹⁸⁹ IPART, *Assessment of Blacktown City Council's Draft Section 94 Contributions Plan No 24 Schofields Precinct – Final Report*, August 2014, pp 45-47.

¹⁹⁰ The council has already acquired 0.76ha under a VPA with Winten (No 26) Pty Ltd, and owns approximately 48.8ha of Reserve 1006 (the former tip site). CP21 includes \$33 million for the cost of remediation of this land, but no cost for its acquisition, as the council would otherwise be permitted to charge.

As outlined in section 3.5.2, we found BCC's revised approach to land costings to be reasonable as it incorporated advice on the average rates to apply to different underlying zonings from an external valuer, and showed the application of the rates to individual parcels of land. For open space, we further considered the application of the rates and assumptions about the proportion of land constrained and unconstrained to relevant parcels of land.

5.4.1 Application of the rates to land to be acquired for open space

Table 5.6 provides an overview of the portion of land yet to be acquired for open space proposed for each zoning category by BCC. We consider the proposed areas to be reasonable, with the exception of open space Reserve 1002.

Table 5.6 Areas of open space land in each zoning category in BCC's revised land cost estimates

Zoning	Area (ha)	Percentage
Constrained	33.2745	61%
R2	18.1696	33%
R3 HOB 14	1.0563	2%
R3 HOB 21	1.6816	3%
B2 HOB 28	0.4254	1%
Total	54.6074	

Source: Additional supporting information provided by BCC, 8 June 2017.

The costing for Reserve 1002 should reflect more constrained areas

BCC's costing for Reserve 1002 assumes the whole area is unconstrained R2 land. We consider approximately 85% of the land is constrained, because:

- ▼ Flood mapping shows that approximately 85% of the land is flood affected.
- ▼ Reserve 1002 is bounded by land zoned for environmental conservation (which attracts the same rate as flood affected constrained land), and which is also undevelopable. We consider it is reasonable that E2 would be the underlying zoning for most of land to be acquired for Reserve 1002.

Therefore, we recommend BCC apply a constrained rate to 85% of the area of Reserve 1002 to discount the overall value of the land. This would reduce the revised acquisition cost estimates by \$11.8 million.

In response to our draft report, BCC's position on this recommendation was the same as its response to Recommendation 5 in relation to constrained land for transport infrastructure, which is discussed in section 3.5.3.¹⁹¹ For the same reasons as set out in section 3.5.3, we consider that the lower constrained rate should apply to 85% of the acquisition area of Reserve 1002.

¹⁹¹ BCC, Response to IPART's Draft Report, 28 July 2017, pp 2-3 and 10.

5.4.2 Remediation of the tip site

CP21 allows for \$33 million for the development of the tip site. BCC received geotechnical advice, which provided indicative cost for remediation in 2020 and 2040. To determine the cost to include in the contribution plan, the council adopted the midpoint, with implementation in 2030. BCC has stated it will review the cost in the plan if needed.¹⁹² We consider this approach reasonable.

5.5 Criterion 5: Apportionment of open space facilities

IPART finding

25 BCC's approach to apportionment of open space facility costs in CP21 is reasonable.

CP21 apportions the cost of open space facilities to the new residential development only, based on the estimated population. This 'per person' allocation of costs is then multiplied by the estimated occupancy rate for a particular dwelling type to calculate the open space share of the development contribution for each dwelling.

We accept this as a reasonable approach as we consider the need for open space in Marsden Park arises from the demand from the new residential population.

Similarly, the approach used to apportion the costs of the netball facility which meets the demand from residents of Marsden Park, as well as from neighbouring precincts, is reasonable. Based on the expected populations of those other precincts, costs of the venue to be located on Reserve 980 in Schofields are apportioned to CP21 (being the costs of five courts to meet demand from Marsden Park residents and 16% of the cost of an amenities building, carpark and other embellishment of the venue).

5.5.1 Apportionment of remediation costs for the former Grange Avenue landfill site

CP21 apportions the total amount (\$33 million) of remediation work to bring the former Grange Avenue landfill site to a state where it is suitable for accommodating open space and recreational facilities to development in Marsden Park.

We consider that fully apportioning this cost to CP21 is reasonable as it represents an efficient use of the council-owned land when the likely costs of acquiring land for open space elsewhere in the precinct would exceed the cost of remediation. We recognise that there could be a potentially broader community benefit from remediation of the site, and that the costs of remediation could be allocated on a wider basis, consistent with the principles of impactor or beneficiary pays. However, as the use of the site for the open space facilities is the more efficient option, we consider that the primary beneficiaries are new developments in MPP and MPIP, and that wider benefits are incidental.

¹⁹² BCC, *Application for assessment of a section 94 development contributions plan – Section 94 Contributions Plan No 21 – Marsden Park*, December 2016, p 26.

6 Assessment of CP21 - Community services, combined precinct facility and plan administration

CP21 proposes costs of \$11.0 million for land for two community service hubs, \$10.3 million for a combined precinct facility (E2 Conservation zone) and \$7.6 million for plan administration (which is 1.5% of capital costs).

Our findings and recommendations are summarised Table 6.1.

Table 6.1 Summary of IPART's assessment of community services, combined precinct facilities and plan administration in CP21

Criterion	Finding	Recommendation	Cost adjustment
Community services facilities			
Essential works list (EWL)	Only includes land, consistent with EWL		
Nexus	Nexus established for proposed community services		
Reasonable cost	BCC's revised land costs are reasonable	BCC should adopt its revised land costs	\$10.7m
	Potential for reduction in land costs from changing location of community resource Hub 1 (including combined precinct facilities)	Investigate potential for locating these facilities on the Grange Avenue landfill site (Reserve 1006)	
Apportionment	Approach is reasonable		
Combined precinct facilities			
EWL	Including cost of land and embellishment of the E2 Conservation zone in CP21 is reasonable		
Plan administration			
	Costs are calculated using IPART benchmark of 1.5% of capital costs of infrastructure	Reduce plan administration costs to be 1.5% of the revised capital costs of CP21	-\$3.4m

6.1 Community services

6.1.1 Criterion 1: Essential Works List for community services

IPART finding

- 26 CP21 includes only the cost of land for community services, which is consistent with the Essential Works List.

CP21 includes the cost of acquiring land for two community resource hubs, which will provide facilities to directly serve the residents of Marsden Park. Hub 1, the larger of the community resource hub sites will be within a combined precinct facility, accommodating community facilities to be shared with the residents of other precincts (with costs apportioned to other contribution plans). The amount of land and indicative uses for the community resource hubs are:

- ▼ Hub 1 (0.61ha allocated to CP21 from the site total of 3.61ha) could accommodate a combined precinct aquatic and leisure facility and combined precinct district library, a neighbourhood centre, community and cultural development facilities, a youth centre, an arts centre and children and family services facilities.
- ▼ Hub 2 (0.44ha) could accommodate a neighbourhood centre, community and cultural development facilities, and children and family services facilities.¹⁹³

Capital works for these facilities are not included in CP21, consistent with the EWL.

6.1.2 Criterion 2 - Nexus for community services land

IPART finding

- 27 Nexus has been established for the proposed land for community services in CP21.

BCC's proposals for two community resource hubs in CP21 reflect the recommendations in MacroPlan 2012.¹⁹⁴ MacroPlan based its analysis of community need on the Growth Centres Commission's benchmarks, and supported BCC's model for co-locating community facilities. We consider nexus for community facilities in CP21 is established.

6.1.3 Criterion 3 – Reasonable community services land costs

IPART finding

- 28 Consistent with Finding 5, the revised land acquisition cost for community facilities is reasonable.

Recommendation

- 23 BCC increase the proposed cost of acquiring land for community facilities in CP21 by \$3,906,000 to \$8,097,000, reflecting BCC's revised cost estimates.

¹⁹³ CP21, pp 29-32 and Appendix F (p 80).

¹⁹⁴ MacroPlan 2012, pp 28-35.

CP21 provides for land acquisition costs of \$4.19 million for land to accommodate the two community resource hubs (assuming an average rate of \$400/m²). This amount is made up of \$2,434,000 for Hub 1 (being 17% of the total site, the remainder of which will accommodate combined precinct facilities) and \$1,756,800 for the land for Hub 2.¹⁹⁵

Following its revisions to land cost estimates, BCC revised the cost for these two community resource hubs to \$8,097,000, which reflects an average rate of \$773/m². As outlined in section 3.5.2, we found BCC's revised approach to land costings to be reasonable.

Application of the rates to land to be acquired for community facilities

Table 6.2 provides an overview of the portion of land yet to be acquired for community facilities assessed for each zoning category. We consider the estimates to be reasonable.

We note the revised estimates propose an additional \$15.1 million to acquire all the land for community resource Hub 1 and Hub 2, including the area for the combined precinct facility.

Table 6.2 Area of each zoning category in BCC's revised land cost estimates for land for community services in CP21

Underlying Zoning	Area (ha)	Percentage
R3 HOB 21	3.6085	89%
B2 HOB 14	0.4392	11%
TOTAL	4.0477	

Source: Additional supporting information provided by BCC, 8 June 2017.

Potential relocation of combined precinct facility to the former Grange Avenue landfill site to reduce land costs

IPART finding

- 29 Land costs in CP21 could be reduced by \$4.87 million if the community centre, including the aquatic centre, were relocated on the Grange Avenue landfill site (Reserve 1006) as assumed in MacroPlan's technical study.

The site of 3.6 hectares zoned for community services facilities, including the combined precinct facilities, is adjacent to the former Grange Avenue landfill site. Early planning for the Marsden Park precinct assumed these buildings would be on the landfill site.

A cost saving to CP21 of \$4.87 million (based on BCC's revised land costs) could be achieved if the facilities planned for this site were located on the landfill site (Reserve 1006). We recognise that ultimately, whether such an option is feasible, is a matter for geotechnical assessment.

MacroPlan's 2012 technical study assumed that the landfill site would accommodate a large (district) aquatic centre and an indoor sports centre, subject to investigation of its suitability. A study later in 2012 indicated it had been decided not to locate the pool on Reserve 1006, and the draft and final ILP reflected this position. We understand that the reason for the

¹⁹⁵ CP21, App H and Worksheet Land Acquisition Marsden Park 2016 Adoption.

decision to move the location was due to the constraints on construction of such a building on the landfill site, even on the area surrounding the tip mound. This is confirmed by a 2015 report on the potential for, and costs of, remediation of the tip site which stated that the consultant “understands that infrastructures with heavier loading or requiring deeper foundations such as grandstands, swimming pools and indoor multi-use courts are currently not being considered”..¹⁹⁶

A significant cost saving in CP21 could be realised with its relocation. However, the extent of geotechnical assessment which informed the ILP zoning decision is not clear and uncertainty remains about whether Reserve 1006 has the area to accommodate, and capacity to support, construction of the proposed community facility.

BCC advised us that the costs of developing Reserve 1006 in the short term would be prohibitive, and expects demand for recreational and community facilities to arise before the playing fields can be delivered on Reserve 1006. It considers that the most suitable option is to retain the community facilities on the adjacent land..¹⁹⁷

While we accept that the land costs associated with building the community facilities on the current location are reasonable, BCC and DPE could further consider the potential for relocating the centre as greater certainty emerges about what construction can be accommodated on the former tip site.

6.1.4 Criterion 5 – Apportionment of community services land costs

IPART finding

30 BCC’s approach to apportionment of community services land costs in CP21 is reasonable.

As with open space, CP21 apportions the cost of land for community services to the new residential development only, based on the estimated population that will use the facilities. We accept this as a reasonable.

6.2 Combined precinct facilities

CP21 includes costs for two combined precinct facilities:

- ▼ the combined precinct facility, and
- ▼ the E2 Conservation zone Reserve 867, located in the Riverstone Precinct.

¹⁹⁶ See MacroPlan 2012, p 36; GHD, *Marsden Park Precinct Development Grange Avenue Landfill Rehabilitation Works*, November 2012, p 11; and Coffey 2015, p 5.

¹⁹⁷ BCC, Response to IPART’s Draft Report, 28 July 2017, pp 10-11.

6.2.1 Combined precinct facility

IPART findings

- 31 BCC can include the apportioned costs of the combined precinct facility in CP21.
- 32 Consistent with Finding 5, the revised land acquisition cost for the combined precinct facility is reasonable.

Recommendation

- 24 BCC increase the proposed cost of acquiring land for the combined precinct facility in CP21 by \$6,819,000 to \$13,638,000, reflecting BCC's revised cost estimates.

BCC proposes to construct an aquatic and leisure centre as well as a combined precinct district library, a neighbourhood centre, community and cultural development facilities, child and family services and facilities, a youth centre, an arts centre and children and family services facilities on a 3.6 hectare site in Marsden Park.

The majority of facilities to be provided on this site will be shared by residents of eight other precincts in the Blacktown LGA. Based on the expected relative populations of the six precincts the facility will service (total 59,400), CP21 is apportioned 57% of the cost of land (5.9% and 50.9% for Marsden Park and Marsden Park Industrial precincts respectively). A small portion of the site will be for the use of Marsden Park residents only, and this cost is separately included in CP21 (see section 6.1.3).

We consider that BCC can include the apportioned cost of the land for the combined precinct facility in CP21.

Following its revisions to land cost estimates, BCC revised the apportioned cost for the combined precinct facility from \$6,819,000 to \$13,638,000. As outlined in section 3.5.2, we found BCC's revised approach to land costings to be reasonable.

6.2.2 E2 Conservation zone Reserve 867

IPART finding

- 33 BCC can include the costs of the E2 Conservation zone in CP21.

The E2 Conservation Zone¹⁹⁸ (Reserve 867) is an area of 20.37 hectares located in the Riverstone Precinct. It will serve a combined estimated population of 125,000 in 10 precincts in the Blacktown LGA. Based on projected populations, CP21 is apportioned 27% of costs associated with the E2 Conservation Zone (24.2% and 2.8% for Marsden Park and Marsden Park Industrial precincts respectively). CP21 is to contribute \$7.61 million for land costs and \$2.71 million for the cost of works.¹⁹⁹ Although the basis for these costs are not set out in CP21, they are consistent with the costs included in other plans from BCC which we have reviewed, and considered to be reasonable.

¹⁹⁸ Conservation zones are areas set aside in the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* to protect native vegetation to the area such as Cumberland Plain bush land.

¹⁹⁹ CP21, p 34 and Appendix H, and Work Schedule 2016 Adoption Combined Precinct Fac E2 Zone.

The conservation zone serves an environmental purpose, and is not recognised as land for open space or other purposes in CP21. Technically, it would not comply with the EWL. However, in previous assessments of BCC's contributions plans for precincts that include costs of the E2 conservation zone, we have considered that the apportioned cost of land and facilities for this reserve may be included in the plan because:

- ▼ The conservation zone was zoned as 'E2 Environmental Conservation' under the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (the Growth Centres SEPP).
- ▼ The Growth Centres SEPP nominated Blacktown City Council as the acquisition authority for the conservation zone.
- ▼ At that time, there was an agreement between DP&E and the council to apportion the total cost of land and facilities for the conservation zone amongst all of the Blacktown City Council's residential precincts within the North West Growth Centre..²⁰⁰

6.3 Our assessment of plan preparation and administration costs

IPART finding

- 34 Plan administration costs in CP21 are calculated using the IPART benchmark of 1.5% of the capital costs of infrastructure, which we consider to be a reasonable approach.

Recommendation

- 25 BCC reduce plan administration costs in CP21 so that they are 1.5% of the reduced capital cost which results from this assessment. Based on a reduced capital works amount of \$228,747,388, this reflects a reduction of \$3,431,211 in the interim.

The Practice Note provides that plan administration costs may include:

- ▼ background studies, concept plans and cost estimates that are required to prepare the plan, and/or
- ▼ project management costs for preparing and implementing the plan (eg, the employment of someone to co-ordinate the plan)..²⁰¹

The total cost of plan administration in CP21 is \$7.6 million..²⁰² This is reasonable as it is calculated on the basis of the IPART benchmark of 1.5% of capital costs.

To align with the 1.5% benchmark rate, this amount should reduce as a result of our assessment.

Based on our recommendations that would reduce the cost of essential infrastructure in CP21 by \$229 million, we calculate that plan administration costs would reduce by approximately \$3.4 million. This amount is indicative only. When revised costs for infrastructure items (such as open space embellishment items) are reinstated in the plan, the cost of capital works will increase, as will the cost of plan administration.

²⁰⁰ IPART, *Assessment of Blacktown City Council's Amended Section 94 Contributions Plan No 20, Riverstone & Alex Ave*, March 2015, p 23.

²⁰¹ Practice Note, p 9.

²⁰² CP21, Appendix H.

7 Assessment of CP21 – timing and consultation

7.1 Criterion 4 Timeframe for infrastructure delivery

IPART is required to assess whether the proposed public amenities and services can be provided within a reasonable timeframe. The timing of the proposed public amenities and services is important as it helps to:

- ▼ determine the timing of the council's expenditure
- ▼ demonstrate the council has the capacity to provide the infrastructure, and
- ▼ demonstrate the council can provide the infrastructure to meet the demand for those services within a reasonable timeframe.

This section presents our assessment of the timing of infrastructure provision in CP21.

IPART finding

- 35 BCC's approach to the staging of infrastructure provision in CP21 is reasonable, and the evidence to date suggests that the proposed infrastructure can be delivered in a timely fashion.

The proposed timing for delivery of stormwater and transport infrastructure, and most open space facilities in CP21, is for the works to be delivered in three 5 or 6-year tranches from 2016 to 2032. CP21 does not indicate when the combined precinct open space (netball) and community facilities will be delivered.²⁰³

The evidence suggests the infrastructure and facilities in CP21 can be delivered in a reasonable timeframe.

Progress to date is consistent with the order of priority established in CP21.²⁰⁴ Staging and timing of the delivery of stormwater and transport infrastructure is based on the expected development progress across the precincts. BCC has advised that a significant amount of infrastructure, for example basins and collector roads, is likely to be provided as development proceeds by developers either under a VPA, or as works-in-kind in accordance with conditions of development consent.²⁰⁵ Developers have already agreed to provide some open space parks and reserves with playing fields under a VPA or as works-in-kind.²⁰⁶

²⁰³ BCC advises it is difficult to provide a timeline for provision of shared precinct community facilities without an identified funding source for the capital works.

²⁰⁴ The order is stormwater, transport, open space then community facilities: CP21, p 8.

²⁰⁵ File note, meeting with BCC, 19 January 2017.

²⁰⁶ For example Reserves 934, 998 and 999.

CP21 shows to date:

- ▼ expenditure on works is \$24.0 million (or 5.0% of the total estimated costs in the plan of \$506.6 million), and
- ▼ land acquisitions amount to \$13.6 million (or 3.0% of the total value of land in the plan of \$466.6 million).²⁰⁷

Timing of remediation and provision of facilities in Reserve 1006

We consider BCC's decisions to remediate the landfill site between 2022 and 2027, and provide all the active sports fields and associated active and passive facilities on Reserve 1006 in the period 2028 to 2032 is reasonable.

BCC commissioned advice from Coffey in 2015 on the landfill closure works necessary to prepare the site for its intended open space and recreational uses and cost estimates to achieve this. Coffey's report stated that the timing to develop the site was a key factor influencing many aspects of the engineering design of the work needed and its cost. It provided three indicative cost estimates, as set out in Table 7.1.²⁰⁸ BCC resolved to deliver the facilities in 15 years, with a mid-point (average) cost of around \$33 million.

Table 7.1 Indicative cost estimates for remediation of Grange Avenue landfill site based on implementation timing

Implementation Timing	Indicative extra-over cost (current value)	Comment
In 5 years (2020)	~\$52m	
In 25 years (2040)	~\$14m	Assuming leachate, gas and settlement conditions have improved, thus a reduced level of rehabilitation works would be required.
Between 5 and 25 years	Likely to be over \$35m	Costs between 5 and 25 years are outside the scope of this report and may be difficult to estimate due to many variable factors.

Source: Coffey Environments Australia Pty Ltd, *Grange Avenue Closed Landfill, Marsden Park, NSW: Advice on Landfill Closure Work*, August 2015, p 12.

Under our assessment of the reasonable cost criterion, it could be argued that it would be more reasonable for BCC to deliver this open space at a lower cost over a longer time period. However, BCC has balanced the higher cost of undertaking the remediation work sooner against the delay in providing half of the active open space needs of new residents.²⁰⁹ We consider this strategy is reasonable.

²⁰⁷ CP21, Appendix H and Work Schedules. Land acquisitions consist of \$9.3 million for land within Marsden Park and \$4.3 million for land for the combined precinct facilities. In addition, BCC has agreed the value for land which will be acquired under VPAs in the future, to an amount of \$37.5 million: BCC Response to IPART, 6 March 2017, pp 1-2. BCC also has VPAs with agreed value of works to be constructed.

²⁰⁸ Coffey Environments Australia Pty Ltd, *Grange Avenue Closed Landfill, Marsden Park, NSW: Advice on Landfill Closure Work*, August 2015.

²⁰⁹ BCC, Business Paper Meeting of 7 December 2016, pp 5-6. D17/1114

7.2 Criterion 6: Consultation

IPART finding

- 36 BCC conducted appropriate community liaison and publicity when preparing the amended CP21.

IPART must assess whether the council has conducted appropriate community liaison and publicity in preparing the contributions plan. We consider BCC's process for CP21 satisfies the consultation criterion.

BCC exhibited the 2016 version of CP21 between 28 September and 28 October 2016. This version of CP21 is essentially a new plan, as the previous version applied only to the Marsden Park Industrial Precinct. BCC gave consideration to the issues raised in the five submissions received.²¹⁰ The main response to issues raised was to replace the cost of a roundabout with costs for traffic signals.

²¹⁰ See BCC, Business Paper, Meeting of 7 December 2016 (Attachment 2). One submission received late was noted only.

8 Assessment of CP21 – other matters

The Practice Note provides that IPART may consider any other relevant matters in assessing a contributions plan.

IPART findings

- 37 CP21 satisfactorily complies with the information requirements set out in the EP&A Act and Regulation and is generally consistent with the *Development Contributions Practice Note* (2005).
- 38 Although public schools create demand for transport and stormwater infrastructure, BCC has not included public school land in the developable land area within CP21 and so has not apportioned infrastructure costs to this development.
- 39 It is likely BCC has underestimated the final population for the MPP and MPIP in CP21.

Recommendations

- 26 BCC include the 13.96 hectares of public school land in the Net Developable Area (NDA) for the purpose of calculating transport and stormwater contributions given schools will create demand for this infrastructure, unless the Minister issues a section 94E exemption for education land.
- 27 BCC update the population estimates to reflect DPE's most recent estimates, and BCC continue to review the population regularly to ensure an appropriate provision of facilities and contributions in the plan, and to inform the planning needs of nearby precincts.

8.1 CP21 complies with legislative information requirements

Three documents set out the information councils should include in a contributions plan:

- ▼ the EP&A Act (sections 94 to 94EC) which sets out the provisions for the making of a contributions plan
- ▼ the EP&A Regulation (clause 27) which lists the particulars that must be included in the contributions plans, and
- ▼ the *Development Contributions Practice Notes* (2005).²¹¹

We found the information provided in CP21 generally complies with the requirements of the Regulation (see Appendix D) and is set out in a manner that is consistent with the guidelines in the 2005 Practice Notes.

²¹¹ Department of Infrastructure, Planning and Natural Resources, *Development contributions Practice notes*, July 2005.

8.2 Recommend development contributions charged for education land

BCC proposes in CP21 to exempt 13.96 hectares of land for public schools from being levied development contributions.

In our previous reviews of contributions plans we have recommended that, where the exclusion of development from paying contributions is at the council's discretion and not a Ministerial directive, the council should bear the cost of the exclusions.²¹²

We understand the Department of Education frequently declines to pay development contributions. Therefore, if the land were included in the plan, ratepayers would effectively pay the Department of Education's contribution. We recommended the Minister resolve the situation by either:

- ▼ requiring the Department of Education to pay development contributions (our preferred option), or
- ▼ issuing a section 94E exemption for land used for schools.²¹³

There is no section 94E direction from the Minister currently to exempt schools from paying contributions. Hence, we maintain that the land allocated for public schools (13.96 hectares in CP21) be included in the NDA for the purposes of calculating contributions.

We still consider a requirement for the Department of Education to pay contributions would best reflect the impact created by schools on transport and stormwater. With the area of public education land included in the NDA in CP21, we estimate residential contributions would decrease by an average of:

- ▼ \$264 per dwelling in the MPP South Creek catchment
- ▼ \$458 per dwelling in the MPP Little Creek catchment, and
- ▼ \$3,746 per dwelling in the MPP Bells Creek catchment.²¹⁴

There is no impact on contribution rates in any other catchment.

In response to our draft report, BCC advised that it considered that the 13.96 hectares should continue to be excluded from the plan as the council (ultimately the ratepayers) would be exposed to a loss should the Department of Education not pay contributions).²¹⁵

8.3 Recommend regular review of population estimates for CP21

Based on the Indicative Layout Plans (ILP) prepared in 2011 and 2013, BCC estimates the population of the two precincts covered by CP21 will be 33,742.²¹⁶

²¹² IPART, *Assessment of The Hills Shire Council's Section 94 Contributions Plan No 15 – Box Hill Precinct*, March 2016, p 58.

²¹³ IPART, *Assessment of Blacktown City Council's Section 94 Contributions Plan No 20 – Riverstone & Alex Ave*, July 2016, p 50.

²¹⁴ These are estimates of indicative changes only. We have assumed that transport costs are apportioned to residential development on a 'per person' basis but have not incorporated a reapportionment of certain transport costs to a new traffic catchment area (Recommendation 6). The ultimate impact on contributions rates will depend on the final catchments for stormwater and transport, and the outcomes from a range of our other recommendations.

²¹⁵ BCC, Response to IPART's Draft Report, 28 July 2017, p 11.

²¹⁶ CP21, pp 5-6.

In CP21 population estimates are used to determine:

1. infrastructure provision for open space and community services, and
2. contribution rates for open space and community services..²¹⁷

The population estimates are based on the minimum residential density required under the Growth Centres SEPP:

- ▼ 15 dwellings per hectare for R2 zoned land, and
- ▼ 25 dwellings per hectare for R3 zoned land..²¹⁸

Accordingly, BCC estimated approximately 10,308 lots would be developed in the MPP, based on the precinct planning zoning. In its submission on the draft CP21, GLN Planning for Stockland provided evidence that greater densities were being achieved in the MPP, based on 1,514 approved lots (15% of total development) and 253 lots pending approval:

- ▼ For R2 zoned land, on average, BCC approved Stockland to develop to a density of 18.1 dwellings per hectare (20.7% greater than the minimum under the SEPP).
- ▼ For R3 land, on average, BCC approved Stockland to develop at a density of 30.1 dwellings per hectare (20.4% greater than the minimum under the SEPP)..²¹⁹

In response, BCC had advised that it is not possible to revise population estimates without further published information on the actual yields, which was not available at that time..²²⁰

DPE recently released for consultation a draft *North West Priority Growth Area – Land Use and Infrastructure Implementation Plan*, which suggests approximately 90,000 dwellings will be achieved in the North West Priority Growth Area, 20,000 more than originally envisaged..²²¹

The Open Space Audit for the North West Priority Growth Area commissioned by DPE suggested the market driven 2015 population estimate for the MPP would be 40,608, which is a 10,608 (35%) increase in population from the precinct plan estimate. Similarly, it predicts an increase in population of the MPIP to 4,045, an increase of 545 (or 16%). This indicates a total population of 44,653 compared with the 33,742 assumed in CP21, representing a 32% increase..²²² The audit also concluded that two more local parks could be needed to meet the greater demand, and further assessment of open space provision would need to occur.

²¹⁷ We recommend contributions for transport are also apportioned on a per person basis for residential development.

²¹⁸ State Environmental Planning Policy (Sydney Region Growth Centres) 2006..

²¹⁹ GLN Planning, *Draft Section 94 Contributions Planning No 21 – Marsden Park Submission on behalf of Stockland Residential Developments*, October 2016, Appendix A.

²²⁰ BCC, Business Paper, Meeting of 7 December 2016, Response to Submissions, p 1 and BCC, Response to IPART, 6 March 2017.

²²¹ DPE, *North West Priority Growth Area – Land Use and Infrastructure Implementation Plan*, May 2017.

²²² GHD, *Department of Planning and Environment – Priority Growth Areas – Open Space Audit – North West Area*, April 2016, p 39.

In addition, the SEPP has recently been modified to reduce the minimum lot size for semi-detached dwellings in the R2 and R3 zones from 300m² to 200m² and 150m² respectively. It also reduces the minimum lot size for semi-detached dwellings to 200m² in the 15 dwelling per hectare zone, and 125m² in higher densities.²²³ DPE also propose further changes with indicative ranges for zones, so the 15 dwelling per hectare zone would be 15 to 25 dwellings per hectare, indicating that higher densities would be achieved.²²⁴

We consider that when the proposed changes flow through to the SEPP, BCC would be in a position to be able to update its population estimates on the basis of the updated zonings and likely development across the priority growth area. We also recommend that BCC regularly review the population estimates in the plan. This will help to reduce the risk of BCC:

- ▼ under-providing infrastructure (primarily open space) in the plan if there is a higher than anticipated population, and
- ▼ over-collecting development contributions based on the plan because there are more dwellings than anticipated.

²²³ See DPE, *Explanation of Intended Effect – State Environmental Planning Policy to Amend State Environmental Planning Policy (Sydney Region Growth Centres) 2006 – Minimum lot size for semi-detached dwellings*, November 2015, pp 1, 2 and 4.

²²⁴ DPE, *Explanation of Intended Effect – Amendments to State Environmental Planning Policy (Sydney Region Growth Centres) 2006 – For North West Priority Growth Area*, May 2017.



Appendices

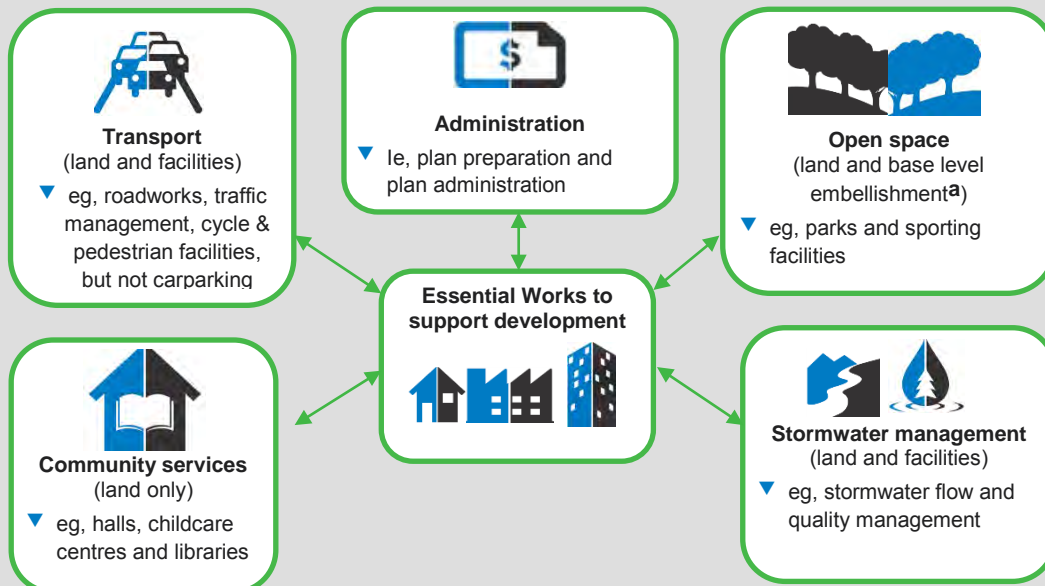


A Terms of Reference



B Infrastructure items on the Essential Works List

Box B.1 Infrastructure items on the Essential Works List



The Essentials Works List **does not include** buildings for community services. It also **does not include** land and works for environmental purposes eg, bushland regeneration or riparian corridors, **unless** it serves a dual purpose with one of the categories on the Essential Work List.

^a Base level embellishment are defined as works required to bring open space up to a level where it is secure and suitable for passive or active recreation (eg, site regrading, utilities servicing, basic landscaping, drainage and irrigation, basic park structures, lighting and outdoor courts).

Source: Department of Planning & Environment, *Revised Local Development Contributions Practice Note- For the Assessment of Local Contributions Plans* by IPART, February 2014, pp 8-9.

C Analysis supporting assessment of stormwater infrastructure costs (section 4.4)

C.1 Stormwater basin cost estimates in CP21

We have compared JWP's and BCC's cost estimates for stormwater basins for each catchment, precinct and the aggregated contribution plan (Table C.1).

Table C.1 Stormwater basin costs estimates in CP21 (\$June 2016)

Catchment	BCC proposed total cost (\$m)	JWP recommended total cost (\$m)	BCC proposed unit cost (\$/m ³)	JWP recommended unit cost (\$/m ³)
MPP				
Bells Creek	6.8	2.2	183	58
Marsden Creek	38.8	13.5	386	124
Little Creek	20.6	5.6	130	35
South Creek	21.1	12.6	224	133
MPP Total	87.4	33.9	223	85
MPIP				
Bells Creek	17.6	7.4	169	79
Marsden Creek	6.4	3.8	129	77
Little Creek	20.5	5.8	220	106
MPIP Total	44.5	17.0	174	86
CP21 Total	131.8	50.8	208	85

Sources: CP21 Supporting Spreadsheets; J. Wyndham Prince Preliminary Cost Estimates – Marsden Park Residential Precinct, 22 July 2013 and IPART calculations.

BCC's total proposed works cost estimate for stormwater basins is \$131.8 million, which is considerably higher than JWP's cost estimate of \$50.8 million. We have then calculated a per cubic metre rate for stormwater basins. BCC's per cubic metre rate is \$208/m³, which is 244% of JWP's rate of \$85/m³.

Table C.2 provides a comparison of basin costs across existing contribution plans predominately in the northwest growth sector. It shows a significant difference between average basin cost estimates in the precincts in the Blacktown Local Government Area (LGA) compared with basins in the adjacent precincts in The Hills Shire Council (THSC) LGA and Austral and Leppington North precinct in the Camden and Liverpool LGAs.

These differences do not appear to be attributable to economies of scale with basin size. The next highest average basin cost estimate to BCC contributions plans is Austral and Leppington North. It has a large number of relatively small basins with an average basin

size of only 39% of that in CP21, yet its average basin cost is less than 60% of BCC's estimate for CP21. Similarly, in BCC's Schofields precinct (CP24) the average basin size is less than one third of that in CP21 yet the average estimate is still approximately 11% less than BCC's estimate for CP21.

In Box Hill (CP15) the per cubic metre cost estimate for stormwater basins (indexed to \$June 2016) was \$84/m³. This is almost the same as JWP's recommended cost for Marsden Park.

In Box Hill North (CP16) while the average basin volume is similar to CP21, the average basin cost estimate in CP16 is just under 50% of BCC's estimate for CP21.

Table C.2 Comparison of per cubic metre basin cost estimates and size (\$June 2016)

Contribution plan and Council	Basins volume total (m ³)	Basin cost total (\$m)	Number of basins	Average basin volume (m ³)	Average basin cost (\$/m ³)
CP21 (BCC)	634,618	131.8	20	31,731	208
CP21 (JWP)	596,795	50.8	20	29,840	85
CP20 (BCC)	563,706	143.4	35	16,106	254
CP24 (BCC)	93,998	17.4	11	8,545	185
CP15 (THSC)	436,000	36.5	9	48,444	84
CP16 (THSC)	183,700	18.9	6	30,617	103
Austral & Leppington North (Camden and Liverpool Councils)	332,310	37.2	27	12,308	112

a CP20 costs are based on \$2010 (assumed June quarter) costs indexed to \$June 2016. They do not reflect revisions to some soil disposal assumptions and practices that BCC has accounted for in its cost estimates in CP21. We understand that BCC is currently undertaking a major review of the cost estimates in CP20.

b For CP16 we only have aggregated data for basins with embedded raingardens. As such, the average basin cost of \$103 m³ includes the embedded raingarden cost which is likely to overstate the average cost for basin work only.

Sources: CP21 (2016); CP20 (2016); CP15 (2016); Austral and Leppington North Contributions Plans; Cardno - *Austral and Leppington North Precincts, Water Cycle Management Responses to Exhibition Submissions* August 2012 and IPART calculations.

These comparisons suggest that the basin costs in CP21 are relatively high compared with the costs in other plans.

C.2 Raingarden costs in CP21

There are four categories of raingardens in CP21:

- ▼ Embedded raingardens (\$19.3 million) – bio-retention facilities constructed within stormwater detention basins. These are divided into:
 - embedded raingardens - MPP, and
 - embedded raingardens - MPIP.
- ▼ Standalone raingardens (\$11.7 million) – bio-retention facilities that are independent of detention basins and are generally on-stream facilities. These are divided into:
 - standalone raingardens – MPP, and
 - standalone raingardens – MPIP.

Similar to basin cost estimates, BCC's proposed costs for raingardens exceed JWP's cost estimates. Our analysis is primarily based on standalone raingardens in the MPP for which directly comparable costs were available from JWP and BCC. We did not have directly comparable costs for embedded or standalone raingardens in the MPIP.

Our comparison of JWP and BCC standalone raingarden cost estimates in the MPP is presented in Table C.3 below. As this shows, JWP's cost estimates are generally lower than BCC's such that the weighted average of the costs is 28% lower.

Table C.3 MPP standalone raingarden cost estimate comparison (\$June 2016)

Raingarden	BCC (CP21)			JWP			% Difference
	Area (m ²)	Cost (\$)	Unit Cost (\$/m ²)	Area (m ²)	Cost (\$)	Unit Cost (\$/m ²)	BCC vs JWP costs
ML3.0	1,200	749,000	624	1,340	816,574	609	2%
ML7.0	1,700	1,199,000	705	1,820	869,966	478	32%
ML6.0	600	543,000	905	980	574,743	586	35%
ML8.0	1,300	766,000	589	1,400	530,773	379	36%
ML2.0	800	584,000	730	1,600	823,902	515	29%
MM3.9	2,100	1,538,000	732	1,000	868,919	869	-19%
MM2.13	600	743,000	1,238	600	358,036	597	52%
MM2.14	1,600	1,321,000	826	1,600	792,496	495	40%
Totals	9,900	7,443,000	\$752^a	10,340	5,635,409	\$545^a	28%

^a These unit cost values are weighted averages of the unit costs.

Source: CP21 Supporting Spreadsheets (2) J. Wyndham Prince Preliminary Cost Estimates – Marsden Park Residential Precinct, 22 July 2013 and IPART calculations.

Standalone raingardens in the MPP only comprise around 24% of the total raingarden cost estimates in the plan, and standalone raingardens in total are approximately 38% of the total raingarden costs estimates in the plan. We found significant variation between the average cost of embedded raingardens and standalone raingardens in the plan.

Table C.4 compares the average raingarden costs across existing plans. CP24 is an outlier in these cost estimates, being based on relatively small raingarden areas.

Based on a comparison of the other cost estimates:

- ▼ JWP's and BCC's average standalone raingarden cost estimates for CP21 are both relatively high compared with other contributions plans estimates, and
- ▼ BCC's average raingarden cost estimate in CP21 is 28% more than JWP's average raingarden cost estimate for CP21.¹

We consider that BCC high average cost estimates are likely to arise from the high cost rates and underlying assumptions as discussed in detail in Section 4.4.4.

¹ Using CP21 costs as the basis for comparison.

Table C.4 Raingarden cost comparison of existing contribution plans (\$June 2016)

Contribution Plan	Total raingarden area (m ²)	Raingarden cost total (\$m)	Number of raingardens	Average raingarden area (m ²)	Average raingarden cost (\$/m ²)
CP21 (BCC)	9,900	7.4	8	1,238	752
CP21 (JWP)	10,340	5.6	8	1,293	545
CP20 (BCC)	79,420	37.6	34	2,336	473
CP24 (BCC)	3,250	5.5	7	464	1,704
CP15 (THSC)	17,200	6.6	9	1,911	384
CP16 (THSC)	14,480	6.5	13	1,114	450
Austral & Leppington Nth Camden and Liverpool Councils ^a	N/A	N/A	N/A	1,200	262

^a While other contributions plans have site specific basin-by-basin costs, the Austral & Leppington North costs are based on three different generic raingarden sizes. We have included the highest of the three generic unit costs.

Note: All comparisons are based on standalone raingarden costings with the exception of CP20 which included standalone and embedded raingardens.

Source: CP21 (2016); CP20 (2016); CP15 (2016); Austral and Leppington North Contributions Plans; Cardno - Austral and Leppington North Precincts, Water Cycle Management Responses to Exhibition Submissions August 2012 and IPART calculations.

C.3 Stormwater channel costs in CP21

Stormwater channel cost estimates in CP21 are \$44.7 million, representing 19% of total stormwater works costs. The cost estimates across the two precincts in CP21 are:

- ▼ MPP channels - \$31.6 million
- ▼ MPIP channels - \$13.1 million.

JWP's stormwater management plan for the MPP included channel cost estimates, however its plan for the MPIP did not. JWP provided updated channel costs for TC1 and TC2 (which are in the MPP) to IPART on 8 August 2017. Our comparison of JWP and BCC cost estimates for TC1 and TC2 are in Table C.5 below. As this shows, BCC's cost estimates are 31.7% higher than JWP's revised estimates.

Table C.5 MPP stormwater channel cost comparison (\$June 2016m)

	BCC (CP21)	JWP	% Difference
Channel	\$June 2016	\$June 2016	BCC vs JWP costs
TC1 & TC2	20.8	14.2	31.7% ^a
All Other Channels	23.9	N/A	31.7% ^b
Totals	44.7		31.7%

^a This is calculated using BCC proposed costs as the base.

^b Our recommendation has applied the same percentage reduction from TC1 and TC2 to all other channels.

Source: CP21 Supporting Spreadsheets, J. Wyndham Prince Preliminary Cost Estimates – Marsden Park Residential Precinct, 22 July 2013, Emails from JWP 8 August 2017 and 11 August 2017 and IPART calculations.

JWP further advised us that the difference in costs between the CP21 cost estimates and its revised estimates for TC1 and TC2 would be indicative of the cost difference for all

stormwater channels in the MPP and MPIP. We therefore applied a 31.7% reduction to the total channel cost of \$44.7 in CP21 to obtain our recommended reduction of \$14.2 million.

D Assessment of CP21 against the information requirements in Clause 27 of the EP&A Regulation

Table D.1 Assessment of CP21 against the information requirements in Clause 27 of the EP&A Regulation

Subclause	Location in CP
1(a) Purpose of the plan.	Section 1.2
1(b) Land to which the plan applies.	Section 1.6
1(c) The relationship between the expected types of development in the area to which the plan applies and the demand for additional public amenities and services to meet that development.	Sections 2 to 6
1(d) The formulas to be used for determining the section 94 contributions required for different categories of public amenities and services.	Section 7
1(e) The section 94 contribution rates for different types of development, as specified in a schedule of the plan.	Section 7.7 and Appendix I
1(g) The council's policy concerning the timing of the payment of monetary section 94 contributions, section 94A levies and the imposition of section 94 conditions of section 94A conditions that allow deferred or periodic payment.	Section 8.2
1(h) A map showing the specific public amenities and services proposed to be provided by the council, supported by a works schedule that contains an estimate of their cost and staging (whether by reference to dates or thresholds).	Appendices A to G
1(i) If the plan authorises monetary section 94 contributions or section 94A levies paid for different purposes to be pooled and applied progressively for those purposes, the priorities for the expenditure of the contributions or levies, particularised by reference to the work schedule.	Sections 1.18 to 1.20
1A Despite subclause 1(g), a contributions plan made after the commencement of this subclause that makes provision for the imposition of conditions under section 94 or 94A of the Act in relation to the issue of a complying development certificate must provide that the payment of monetary section 94 contributions and section 94A levies in accordance with those conditions is to be made before the commencement of any building work or subdivision work authorised by the certificate.	Section 8
2 In determining the section 94 contribution rates or section 94A levy percentages for different types of development, the council must take into consideration the conditions that may be imposed under section 80A(6)(b) of the Act or section 97(1)(b) of the <i>Local Government Act 1993</i> .	Section 8 (generally)
3 A contributions plan must not contain a provision that authorises monetary section 94 contributions or section 94A levies paid for different purposes to be pooled and applied progressively for those purposes unless the council is satisfied that the pooling and progressive application of the money paid will not unreasonably prejudice the carrying into effect, within a reasonable time, of the purposes for which the money was originally paid.	N/A

E Nexus review of roundabouts in CP21, ARRB
Group Ltd Report

CONTRACT REPORT

DRAFT

Nexus Review of Roundabouts in the Marsden Park Contributions Plan

Project No: PRS17057

by Dr Aut Karndacharuk

for Independent Pricing and Regulatory
Tribunal

Nexus Review of Roundabouts in the Marsden Park Contributions Plan IPART Reference: 17/125

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PRS17057-1
10/4/2017 DRAFT

NEXUS REVIEW OF ROUNDABOUTS IN THE MARSDEN PARK CONTRIBUTIONS PLAN

SUMMARY

The Australian Road Research Board (ARRB) has been engaged by the Independent Pricing and Regulatory Tribunal (IPART) to review the nexus of proposed roundabouts in the Marsden Park Section 94 development contributions plan (the Plan) submitted by Blacktown City Council (BCC).

Taking into account the nexus criterion in with the revised local development contributions practice note (the Practice Note), the review considers the eight roundabouts a scope deviation in infrastructure provision from the recommendations in the technical study, and approaches the determination of their reasonableness by considering the following two functional objectives of implementing roundabouts:

- Traffic management and intersection control.
- Road safety and local amenity.

A two-step nexus analysis has been undertaken by first reviewing the road and traffic characteristic of the roundabout intersections. Each roundabout is subsequently reviewed against the two functional objectives in order to determine the reasonableness of the roundabout as a suitable form of intersection control at each location.

Proposed roundabout intersections in the Marsden Park Precinct under investigation



Source: Based on AECOM (2013, p.23).

It is found that Intersection 1 is the only location where the proposed roundabout is not considered an appropriate treatment. As such, the proposed roundabout is unreasonable in terms of nexus.

The nexus review for all other locations has determined that the deviation (proposed roundabouts) is reasonable in terms of its benefit to a wider network (rather than only to adjoining land uses) and as such should be funded via the proposed s94 contributions.

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CONTENTS

1	INTRODUCTION	1
1.1	Purpose and Scope	1
1.1.1	<i>Roundabout Related Transport Items in the Plan</i>	<i>2</i>
1.2	Methodology	2
1.2.1	Overview	2
1.2.2	Review Approach	2
1.3	Structure of the Report.....	3
2	FUNCTIONAL OBJECTIVES OF ROUNDABOUTS	4
2.1	Traffic Management.....	4
2.2	Road Safety and Amenity	6
3	NEXUS ANALYSIS OF ROUNDABOUTS IN THE PLAN.....	8
3.1	Review of Road and Traffic Characteristics	8
3.2	Nexus Assessment against Functional Objectives	10
4	FINDINGS AND RECOMMENDATIONS	13
	REFERENCES	14

TABLES

Table 2.1:	Suitability of types of traffic controls to different road types	4
Table 2.2:	Characteristics of appropriate and inappropriate sites	5
Table 2.3:	Design considerations of roundabouts	5
Table 2.4:	Advantages and disadvantages of LATM roundabouts	7
Table 3.1:	Road and traffic characteristics of roundabouts in full development (2036) scenario	9
Table 3.2:	Nexus assessment of roundabouts against functional objectives	11
Table 4.1:	Project findings and recommendations	13

FIGURES

Figure 1.1:	Proposed roundabout intersections in the Marsden Park Precinct under investigation	1
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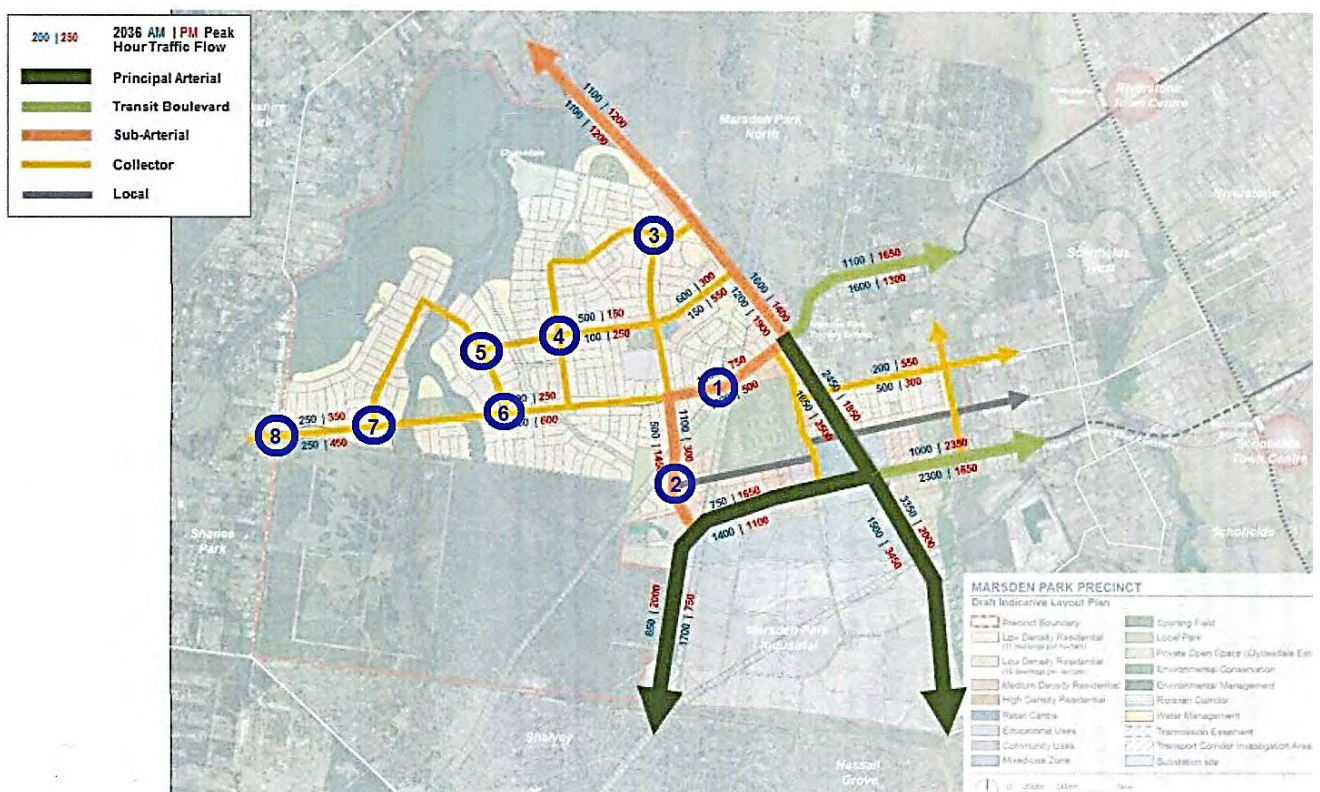
1 INTRODUCTION

The Australian Road Research Board (ARRB) has been commissioned by the Independent Pricing and Regulatory Tribunal (IPART) to review the nexus of eight intersections in the Contributions Plan (the Plan) for the Marsden Park Precinct (the Precinct) (Blacktown City Council 2016b). The review output will inform the assessment of the Plan against the nexus criterion in the revised local development contributions practice note (Practice Note) from the NSW Department of Planning and Infrastructure (2014).

1.1 Purpose and Scope

In accordance with the project terms of reference, the aim of the review is to determine whether eight proposed roundabouts are reasonable in terms of nexus. The location of the eight roundabout intersections is shown in Figure 1.1.

Figure 1.1: Proposed roundabout intersections in the Marsden Park Precinct under investigation



Source: Based on AECOM (2013, p.23).

The road layout and the location of the intersections are consistent with the Precinct's Indicative Layout Plan (ILP) in the 2013 final planning package (Department of Planning and Environment 2017) and the Precinct road hierarchy in the Development Control Plan (Blacktown City Council 2016a).

The main technical document that provides a basis for assessing the nexus of the roundabouts in the Plan is a traffic and transport assessment report prepared by AECOM (2013). The eight roundabouts as the intersection control in the Plan are considered a scope deviation in infrastructure provision from the recommendations in the supporting technical study. The nexus review in this report is therefore undertaken to determine whether the deviation (proposed

roundabouts) is reasonable in terms of its benefit to a wider network (rather than only to adjoining land uses) and as such should be funded via the proposed s94 contributions.

1.1.1 Roundabout Related Transport Items in the Plan

In the schedule of traffic and transport management facilities in Appendix D2 of the Plan (Blacktown City Council 2016b), four transport items are related to an implementation of roundabouts. These include:

- Road MP1.1 – one roundabout on Glengarrie Road near South Street.
- Road MP1.2 – two roundabouts on the Garfield Road extension.
- Road MP4.1 – half roundabout at the Stony Creek Road intersection.
- Miscellaneous item for local traffic management – six roundabouts.

The proposed roundabouts, hence, involves ten intersections in the Precinct. Eight of which are within the scope of this review as identified in Figure 1.1. The roundabout at the Garfield Road extension/western north-south collector intersection, recommended in the technical document (AECOM 2013), is included in the miscellaneous transport item, but is out of scope for this review study. For other out-of-scope roundabout on the Garfield Road extension near Richmond Road, no detailed traffic analysis was provided in the AECOM study to support its implementation.

1.2 Methodology

1.2.1 Overview

The AECOM report adopted a functional road classification to guide design standards relating to road transport infrastructure (including intersections) in the Precinct. The road hierarchy includes:

- Arterial Road – connecting large urban areas.
- Transit Boulevard – located close to centres and allowing for dedicated future busways with a pedestrian friendly environment.
- Sub-Arterial Road – linking town centres with provisions for major bus routes.
- Collector Road – connecting neighbourhoods.
- Local Road – designed to slow residential traffic with pedestrian and cyclist priority.

Within the future road network hierarchy, the nexus between the development in the Precinct and the need for a road intersection, taken at face value, at the eight location has been established through the precinct planning process and the development of the ILP. This is primarily because the intersections are located on higher-order roads (i.e. collector and sub-arterial) that provide connectivity for through (non-local) traffic beyond the local land-use area.

This review of the nexus of the eight roundabouts in the Plan is, therefore, related exclusively to the type of intersections (which ranges from uncontrolled, priority controlled and roundabout to signalised and grade-separated intersections).

1.2.2 Review Approach

Taking into account the nexus assessment criteria (as documented in the Practice Note) and the Austroads Guides for road design and traffic management, the method of reviewing and determining whether a roundabout is an appropriate type for the intersections involves two review steps. The first step is to examine the road and traffic characteristics, including the adopted road

classification (of intersecting roads) and anticipated hourly traffic volumes based on the full development scenario in 2036.

The second step is an assessment of each location of the proposed roundabouts against the following two functional objectives (and requirements) in providing an efficient and safe intersection:

- traffic management and intersection control
- road safety and local amenity.

The provision of a two-lane roundabout as proposed in the AECOM study at an intersection between a Garfield Road extension (collector) and a western north-south collector is also examined in terms of intersection performance for comparison with the eight roundabouts under investigation.

1.3 Structure of the Report

The structure of the report is as follows:

- Section 1 provides an overview of the project, including purpose, scope and methodology.
- Section 2 outlines functional aspects of roundabouts.
- Section 3 presents a nexus assessment of the eight roundabouts in the Plan.
- Section 4 offers a conclusion of the review with findings and recommendations.

2 FUNCTIONAL OBJECTIVES OF ROUNDABOUTS

This section discusses the relevant factors that need to be considered in the selection and implementation of a roundabout in a predominantly urban residential environment such as that in the Precinct. It forms a basis of assessing the nexus (appropriateness) of the proposed roundabouts in the Plan.

2.1 Traffic Management

A roundabout is a form of intersection channelisation in which vehicular traffic circulates around a central island and all entering traffic is required to give way to traffic on the circulating roadway (Austroads 2013). The exposure to traffic conflict is relatively low for the traffic entering roundabouts as there is only one movement direction of circulating traffic.

While single-lane roundabouts can be employed satisfactorily at a wide range of suitable sites on arterials, collectors and local streets as well as in pairs at motorway interchanges, multi-lane roundabouts are suitable for use at T- and four-leg junctions that intersect at or close to 90°. Roads intersecting at oblique angles increase the risk of movement conflicts at exists where drivers on the circulating carriageway can experience difficulty in positioning the vehicle in an appropriate lane for left, through or right-turns on some of the approaches

The *Austroads Guide to Traffic Management* (2013) provides a general planning guide for selecting a suitable intersection control based on various functional road classification. The red highlight indicates the area of relevance to the proposed roundabouts in the Plan.

Table 2.1: Suitability of types of traffic controls to different road types

Road type	Primary arterial	Secondary arterial	Collector and local crossing road	Local street
Traffic signals				
Primary arterial	A	A	O	X
Secondary arterial	A	A	O	X
Collector & local crossing road	O	O	X	X
Local street	X	X	X	X
Roundabouts				
Primary arterial	O	O	X	X
Secondary arterial	O	O	O	X
Collector & local crossing road	X	O	A	O
Local street	X	X	O	A
Stop signs or give way signs				
Primary arterial urban/(rural)	X/(O)	X/(O)	A	A
Secondary arterial urban/(rural)	X/(O)	X/(O)	A	A
Collector & local crossing road	A	A	A	A
Local street	A	A	A	A

A = Most likely to be an appropriate treatment

O = May be an appropriate treatment

X = Usually an inappropriate treatment

Source: Based on Austroads (2013, p.36).

The main reason a roundabout is not an appropriate treatment for a location where a high-order, high-volume road intersecting with a low-volume road is the efficiency (vehicle throughput) of the arterial road where a satisfactory level of mobility cannot be provided.

Additional information on appropriate and inappropriate sites for roundabouts is also provided in the traffic management guide (Austroads 2013). Relevant considerations can be summarised in no particular order in Table 2.2. These considerations as well as the suitability guide in Table 2.1 are taken into account in the review of nexus in Section 3.

Table 2.2: Characteristics of appropriate and inappropriate sites

Site Characteristics	
Appropriate	Inappropriate
<ul style="list-style-type: none"> At intersections where traffic volumes on the intersecting roads are such that: <ul style="list-style-type: none"> Stop or give way signs or the T-junction rule result in unacceptable delays for the minor road traffic. Traffic signals would result in greater delays than a roundabout. 	<ul style="list-style-type: none"> Where traffic flows are unbalanced with high-volumes on one or more approaches, and some vehicles would experience long delays.
<ul style="list-style-type: none"> At intersections where there are high proportions of right-turning traffic. However, satisfactory operation is dependent on the entering flows being balanced so that a heavy right-turn does not cause excessive delay on subsequent entries. 	<ul style="list-style-type: none"> Where a major road intersects a minor road and a roundabout would result in unacceptable delay to the major road traffic.
<ul style="list-style-type: none"> At locations where traffic growth is expected to be high and where future traffic patterns are uncertain or changeable. 	<ul style="list-style-type: none"> Where a satisfactory geometric design cannot be provided due to insufficient space or unfavourable topography or unacceptably high cost of construction.
<ul style="list-style-type: none"> At intersections of local roads where it is desirable not to give priority to either road. 	<ul style="list-style-type: none"> At an isolated intersection in a network of linked traffic signals.
<ul style="list-style-type: none"> At arterial and collector road intersections in outer urban areas and country towns, where only short periods of congestion occur. 	<ul style="list-style-type: none"> Where large combination vehicles or over-dimensional vehicles frequently use the intersection and insufficient space is available to provide for the required geometric layout.

Source: Based on Austroads (2013).

The *Austroads Guide to Road Design* (2015) also discusses methods and parameters used in the geometric design of roundabouts. These considerations are outlined in Table 2.3 with a comment on their relevance to the proposed roundabouts in the Plan.

Table 2.3: Design considerations of roundabouts

Consideration	Description	Relevance to Nexus Review
Number of legs	<ul style="list-style-type: none"> Single-lane roundabouts can operate satisfactorily with more than four legs. For multi-lane roundabouts, the provision of more than four legs should be avoided due to increased conflicts at exits. 	All roundabouts under study are 4-leg, except Intersection 7.

Consideration	Description	Relevance to Nexus Review
Number of entry, circulating and exit lanes	<ul style="list-style-type: none"> The number of roundabout lanes should be limited to the minimum. Due to overtaking issues within the roundabout, it is suggested to provide a single-lane roundabout until traffic volumes warrant the use of a two-lane facility. Lane continuity is important for arterial roads where a two-lane approach should have two entry lanes even if capacity analysis shows one lane would be adequate. 	Information about roundabout lanes are not provided.
Central island	<ul style="list-style-type: none"> Central islands are preferably be circular as changes in curvature of the circulating carriageway result in speed differentials and increased driver workload. Roundabout central islands, sized to accommodate design vehicles and desired speeds, should be raised to improve intersection visibility. 	These factors are not directly relevant to the nexus review as they can be addressed at a concept design stage if land for the road reserve is adequately allocated.
Approach and entry geometry	<ul style="list-style-type: none"> The approach and entry treatment is the most important geometric parameter to control the speeds of entering traffic from a safety performance perspective. 	
Circulating carriageway	<ul style="list-style-type: none"> The width of circulating carriageway is determined based on the number of circulating lanes and the radius of vehicle swept path. The design vehicles (e.g. heavy vehicles) and their swept path requirements may be different for the various paths through a roundabout. 	
Exit curves	<ul style="list-style-type: none"> Exit curves should be designed for drivers to efficiently negotiate from the circulating roadway through the exit, except in a high pedestrian area where a smaller radius exit curve is used for pedestrian crossing. 	
Entry and exit widths	<ul style="list-style-type: none"> While the width of the entry should not be any wider than necessary to enable a safe entry speed, the exit widths should enable traffic to leave the circulating roadways as efficiently as possible. 	
Others	<ul style="list-style-type: none"> These include a consideration of the separation between legs, superelevation, gradient and drainage. 	

Source: Based on Austroads (2015).

2.2 Road Safety and Amenity

While the focus of the discussion in Section 2.1 is on the traffic management of motor vehicles, the role an urban roundabout plays in road safety and local amenity is primarily related to the need and expectations of non-vehicular road users, particularly in a residential area. The emphasis is to be placed on reducing the dominance of motor vehicles (e.g. speed and volume) and negative impact on the road environment (e.g. noise, vibration and air pollution).

From a road safety perspective, a well-design roundabout is the safest form of intersection control. Due to the lower operating speeds of vehicles, fewer injury crashes occur at roundabouts than other forms of intersection that contain traffic signals, stop or give-way signs. According to Austroads (2015), the most important geometric considerations in the provision and design of roundabouts are:

- adequate sign distances to enable driver to:
 - easily identify the intersection as a roundabout
 - observe the movements of other road users (including cyclists and pedestrians) travelling within and on the approaches to the roundabout

- observe a gap in the circulating traffic and enter in a safe manner
- entry geometry to restrict drivers to a safe speed on entry to the roundabout.

It is, nonetheless, noted that the risk of vulnerable users being involved in a crash increase at a roundabout. This is because, unlike traffic signals via signal phasing, pedestrians and cyclists at a crossing point do not have priority over through or turning traffic (unless a zebra crossing is incorporated in a roundabout design). Some users may subsequently experience a reduced level of accessibility.

Incorporating horizontal speed control features, roundabouts can be employed as a traffic calming (speed management) measure. An implementation of a roundabout within a local traffic area to influence a change in driver behaviour to improve road safety and amenity is considered a local area traffic management (LATM) technique.

According to Austroads (2016), a standard roundabout is the second most commonly used LATM device by local government authorities in Australia and New Zealand. The most commonly used device is stop or give-way sign. Other frequently LATM devices speed limit sign, lane narrowing/kerb extension, threshold treatment and road cushion. The advantages and disadvantages of roundabouts in the LATM context are summarised in Table 2.4.

Table 2.4: Advantages and disadvantages of LATM roundabouts

Roundabouts for LATM	
Advantage	Disadvantage
<ul style="list-style-type: none"> ▪ Reduction of vehicle conflict points and road crashes at intersections. 	<ul style="list-style-type: none"> ▪ Restriction to larger service and emergency vehicles and buses unless the roundabout is mountable.
<ul style="list-style-type: none"> ▪ Reduction of vehicle speeds on the approach and through the intersection. 	<ul style="list-style-type: none"> ▪ Relatively expensive especially if land needs to be acquired.
<ul style="list-style-type: none"> ▪ Control of traffic movement and provision of orderly and largely uninterrupted flow of traffic. 	<ul style="list-style-type: none"> ▪ Traffic noise may possibly increase due to braking and acceleration.
<ul style="list-style-type: none"> ▪ Increase in the visibility of the intersection. 	<ul style="list-style-type: none"> ▪ Reduction of the availability of on-street parking.
<ul style="list-style-type: none"> ▪ Clarification of the priority of traffic movements. 	<ul style="list-style-type: none"> ▪ Difficulty for cyclists and pedestrians to negotiate.
<ul style="list-style-type: none"> ▪ Enhancement in the appearance of the street when landscaped. 	
<ul style="list-style-type: none"> ▪ Reduction of vehicle conflict points and road crashes at intersections. 	

Source: Based on Austroads (2016).

Landscaping and street furniture, when carefully planned and designed, can improve safety and amenity by making the intersection a focal point while creating a perception of a low-speed environment. Safe and forgiving streetscape provisions should not (Austroads 2015):

- be a roadside hazard to road users
- impede sight distances available to drivers approaching a roundabout
- obscure the view of a driver at the holding line of a roundabout.

In the predominantly residential context of the roundabouts in the Plan, the provision of roundabouts and landscape planting provides not only improved amenity of local streets, but also interrupts the visual continuity of the street layout with relative wide and straight roads (e.g. 11 m wide carriageway for a collector road).

3 NEXUS ANALYSIS OF ROUNDABOUTS IN THE PLAN

This section contains a two-step nexus analysis of the eight intersections in the Plan by first reviewing the road and traffic characteristic of each roundabout intersection. Each roundabout is subsequently reviewed against the two functional objectives as discussed in Section 2 in order to determine whether a roundabout is an appropriate form of intersection control at each location.

3.1 Review of Road and Traffic Characteristics

The first review step is to examine road network and traffic characteristics of the intersections in question. Based on the information in the traffic and transport study (AECOM 2013), Table 3.1 outlines the road name, classification and peak traffic volumes of the intersecting roads at each intersection location. The hourly peak flows are shown in passenger car units for both morning and afternoon periods in 2036. Two values are shown in the 'Hourly peak flow' column, representing the traffic volumes in the directions either 'eastbound and westbound' or 'northbound and southbound'. Where there is only one value in the peak flow columns for a major or a minor road, there is one approach on that road, representing a 3-leg arrangement for the intersection.

The following points are observed from the intersection comparison in Table 3.1:

- Based on the peak traffic volumes, each intersections can be placed in the following two groups to reflect the catchment it serves:
 - Higher-order intersections, including Intersections 1, 2, 6, 7 and 8. These intersections are located on the road sections of the Garfield Road extension and the north-south extension of Glengarrig Road. The sections closer to Richmond Road are classified as Sub-Arterial Road.
 - Lower-order intersections, including Intersections 3, 4 and 5. Given Access Road 1 is not identified as a main access route to the Precinct, the traffic demand for Intersection 3, albeit being located close to Richmond Road, will be low. Intersections 4 and 5 will service a limited local catchment given that Access Road 2 runs parallel to the Garfield Road extension that links Richmond Road with Stony Creek Road.
- Intersection 8 (Stoney Creek Road / Garfield Road extension) has been assessed in the AECOM study. A priority intersection was recommended as a method of intersection control.
- The technical study (AECOM 2013) proposed the (out-of-scope) intersection of the Garfield Road extension and the western north-south collector to be constructed as a multi-lane roundabout. The 3-leg arrangement is consistent with the ILP.
- The (out-of-scope) roundabout, proposed in the Plan, on the sub-arterial section of the Garfield Road extension has not been discussed (and recommended) by AECOM. No supporting information has been provided to assess the impact of the collector realignment on the south approach of this intersection.

It is important to note that the road and traffic characteristics, discussed in the report, are based on the AECOM study for the forecast future year with full development. When surrounding land uses are yet to be fully developed, temporary traffic management and control may be implemented as an interim measure (e.g. priority control at a future signalised intersection). In an event of a major modification to the road layout and/or functional hierarchy, in response to, for example, Council policy or development requests, traffic demand and distribution are likely to change. As such, the assumptions that form the basis of this nexus review are to be re-investigated.

Table 3.1: Road and traffic characteristics of roundabouts in full development (2036) scenario

Intersection	Major Road				Minor Road				Recommended form of control by AECOM
	Name	Classification	Hourly Peak Flow		Name	Classification	Hourly Peak Flow		
			AM	PM			AM	PM	
Roundabouts under this nexus review									
1	Garfield Rd Ext	Sub-Arterial Rd	894 / 999	769 / 499	–	Local Rd	– / –	– / –	–
2	Central N-S	Sub-Arterial Rd	437 / 1 120	1 485 / 309	–	Local Rd	– / –	– / –	–
3	Access 1 Rd	Collector Rd	20 / 72	22 / –	Central N-S	Collector / Local Rd	27 / –	151 / –	–
4	Access 2 Rd	Collector Rd	255 / 84	95 / 227	Western N-S	Collector Rd	4 / 0	4 / 0	–
5	Access 2 Rd	Collector Rd	50	200	–	Collector / Local Rd	7 / 122	0 / 40	–
6	Garfield Rd Ext	Collector Rd	427 / 250	234 / 578	–	Collector / Local Rd	– / 0	– / 2	–
7	Garfield Rd Ext	Collector Rd	223 / 205	251 / 371	–	Collector Rd	14	31	–
8	Stony Creek Rd	Sub-Arterial Rd ¹	346 / 255	464 / 132	Garfield Rd Ext	Collector Rd / –	– / 272	– / 435	4-leg, priority intersection
Roundabout recommended in technical study, and proposed in the Plan									
B	Garfield Rd Ext	Collector Rd	416 / 257	206 / 614	Western N-S	Collector Rd	14	31	3-leg, multi-lane roundabout
Roundabout not recommended in technical study, but proposed in the Plan									
–	Garfield Rd Ext	Sub-Arterial Rd	– / –	– / –	–	Local Rd	– / –	– / –	–

Note 1: Response from Council to an information request from IPART on 16 February 2017 describes Stony Creek Road as a Sub-Arterial Road.

3.2 Nexus Assessment against Functional Objectives

Taking into account the review of the road and traffic characteristics, as discussed in Section 3.1, the detailed nexus assessment of each intersection location is provided in Table 3.2. It aims at quantifying a net benefit during the consideration of the following two functional objectives of roundabouts:

- traffic management and intersection control
- road safety and local amenity.

The output of the nexus assessment is a determination whether a roundabout treatment is a suitable option at each intersection location based on the available information. Intersection 1 is the only location where the proposed roundabout is not considered an appropriate treatment. As such, the proposed roundabout is unreasonable in terms of nexus.

It is important to note that the outcome of this nexus analysis would have cost implication even for the proposed roundabouts with reasonable nexus. This is due to the design requirements that differ between higher- and lower-order intersections to maximise the functional benefits. In particular, for lower-order intersections with low traffic volumes, a 'mini-roundabout' with a traversable central island (Candappa 2015) can be considered. This would not only reduce the capital and operational costs of the infrastructure, but also improve the safety and amenity of the road users through local area traffic and speed management.

Table 3.2: Nexus assessment of roundabouts against functional objectives

Roundabout	Nexus Review		Review Outcome
	Traffic Management	Road Safety and Amenity	
1	<ul style="list-style-type: none"> Traffic flows at intersection are likely to be unbalanced due to the intersection of a sub-arterial with local roads. It is likely that one or more approaches would experience long delays during peak hours. There is a possibility that traffic to/from minor local roads (esp. right-turners) will cause an unacceptable delay to the major road traffic. Its proximity to a signalised intersection could result in 'rat running' in local residential streets to avoid traffic signals. 	<ul style="list-style-type: none"> The roundabout will provide improved safety through speed management, particularly on the sub-arterial road. The local amenity benefit is limited due to a higher standard (e.g. size) required for roundabout design on a higher-order road. 	<ul style="list-style-type: none"> The negative traffic management impact outweighs the road safety and amenity benefit. The roundabout is, therefore, not considered an appropriate treatment at this location.
2	<ul style="list-style-type: none"> Traffic flows at intersection are likely to be unbalanced due to the intersection of a sub-arterial with local roads. It is likely that one or more approaches would experience long delays during peak hours. There is a possibility that traffic to/from minor local roads (esp. right-turners) will cause an unacceptable delay to the major road traffic. 	<ul style="list-style-type: none"> The roundabout will provide improved safety through speed management, particularly on the sub-arterial road. The sub-arterial roundabout would function as a gateway treatment to indicate a transition between residential and industrial areas. 	<ul style="list-style-type: none"> The negative traffic management impact does not outweigh the road safety and amenity benefit. The roundabout is, therefore, considered an acceptable treatment at this location.
3	<ul style="list-style-type: none"> Based on Table 2.1, a roundabout treatment is suitable for an intersection between a collector and a local road. A relatively high proportion of right-turning traffic onto Access Road 1 (collector road) is anticipated during the afternoon peak. With low traffic volumes on other approaches, excessive delay is unlikely. 	<ul style="list-style-type: none"> The roundabout will provide improved road safety and local amenity benefits as discussed in Section 2.2. 	<ul style="list-style-type: none"> There is a net positive impact for implementing the roundabout. The roundabout is, therefore, considered an appropriate treatment at this location.
4	<ul style="list-style-type: none"> Based on Table 2.1, a roundabout treatment is suitable for an intersection between two collectors. With the very low traffic flows on the minor road (Western N-S Rd) during peak periods, unbalanced flow patterns are likely with some vehicles experiencing some delays. 	<ul style="list-style-type: none"> The roundabout will provide improved road safety and local amenity benefits as discussed in Section 2.2. 	<ul style="list-style-type: none"> There is a net positive impact for implementing the roundabout. The roundabout is, therefore, considered an acceptable treatment at this location.

Roundabout	Nexus Review		Review Outcome
	Traffic Management	Road Safety and Amenity	
5	<ul style="list-style-type: none"> Based on Table 2.1, a roundabout treatment is suitable for an intersection between a collector and a local road. 	<ul style="list-style-type: none"> The roundabout will provide improved road safety and local amenity benefits as discussed in Section 2.2. 	<ul style="list-style-type: none"> There is a net positive impact for implementing the roundabout. The roundabout is, therefore, considered an appropriate treatment at this location.
6	<ul style="list-style-type: none"> Based on Table 2.1, a roundabout treatment is suitable for an intersection between two collectors. With the very low traffic flows on the minor roads during peak periods, unbalanced flow patterns are likely with some vehicles experiencing some delays. 	<ul style="list-style-type: none"> The roundabout will provide improved road safety and local amenity benefits as discussed in Section 2.2. 	<ul style="list-style-type: none"> There is a net positive impact for implementing the roundabout. The roundabout is, therefore, considered an acceptable treatment at this location.
7	<ul style="list-style-type: none"> Based on Table 2.1, a roundabout treatment is suitable for an intersection between two collectors. Stop or give-way control at this intersection is likely to result in unacceptable delays for the minor road traffic. 	<ul style="list-style-type: none"> The roundabout will provide improved road safety and local amenity benefits as discussed in Section 2.2. 	<ul style="list-style-type: none"> There is a net positive impact for implementing the roundabout. The roundabout is, therefore, considered an appropriate treatment at this location.
8	<ul style="list-style-type: none"> Based on Table 2.1, a roundabout treatment is suitable for an intersection between a sub-arterial and a collector road. The road classification of the west approach is unknown, but its traffic characteristics are unlikely to result in unsatisfactory operation of a roundabout. The AECOM study has demonstrated that a priority (stop or give-way) controlled intersection can operate satisfactorily at this location, which challenges the need for a roundabout. 	<ul style="list-style-type: none"> The roundabout will provide improved safety through speed management, particularly on Stony Creek Rd. The roundabout will provide improved local amenity benefits as discussed in Section 2.2. 	<ul style="list-style-type: none"> There is a net positive impact for implementing the roundabout. The roundabout is, therefore, considered an acceptable treatment at this location.

4 CONCLUSIONS AND RECOMMENDATIONS

The findings of the review of the Plan in terms of nexus along with ARRB recommendations are presented in Table 4.1.

Table 4.1: Project findings and recommendations

Findings		Recommendations	
1	Given the need for a road intersection has been established through the precinct planning process, the focus of the nexus review of the proposed roundabouts is related to the type of intersection control at the eight intersection locations.	a	To be acknowledged by IPART.
2	The review approach for the nexus analysis is for each intersection to be assessed against the following two functional objectives of providing a roundabout as an efficient and safety intersection treatment: <ul style="list-style-type: none"> Traffic management and intersection control. Road safety and local amenity. 		
3	The review of the road and traffic characteristics differentiates the higher-order intersections from the lower-order ones based on vehicular traffic volumes. The lower-order roundabouts can be subject to lower design requirements to enable improved safety and amenity in the local traffic area.	b	BCC to consider the implementation of mini-roundabout design with a central island traversable by heavy vehicles (and buses) at Intersections 3, 4 and 5.
4	The proposed roundabout at Intersection 1 is unreasonable in terms of nexus. Nexus for other roundabouts can be supported.	c	The 'local traffic management roundabouts' item in the Plan is to be revised to exclude Intersection 1.

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Glossary

Apportionment	The division of the costs equitably between all those who benefit from the infrastructure, including any existing population. Full cost recovery from contributions should only occur where the infrastructure is provided to meet the demand from new development.
Condition of development consent	A condition imposed by a consent authority (eg, council) when approving an application for development
Contributions cap	The maximum contribution payable by a developer for local infrastructure per residential dwelling or lot
Contribution rate	The rate used to calculate the total contributions payable by the developer for different infrastructure categories
Contributions plan	A plan that a council uses to impose a contribution on new development to help fund the cost of providing new local infrastructure and services to support that development
BCC	Blacktown City Council
CP15	The Hills Shire Council, <i>Section 94 Contributions Plan No 15 – Box Hill Precinct</i> , June 2015
CP20	Blacktown City Council, <i>Section 94 Contributions Plan No 20 Riverstone & Alex Ave Precincts</i> , November 2015
CP21-2012	Blacktown City Council, <i>Draft Section 94 Contributions Plan No 21 Marsden Park</i> , January 2012
CP21-2016	Blacktown City Council, <i>Section 94 Contributions Plan No 21 Marsden Park</i> , December 2016
CPI	Consumer price index
DPE	Department of Planning & Environment
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>

Essential Works List (EWL)	<p>These public amenities or public services are considered essential works:</p> <ul style="list-style-type: none"> ▼ land for open space (for example, parks and sporting facilities) including base level embellishment ▼ land for community services (for example, childcare centres and libraries) ▼ land and facilities for transport (for example, road works, traffic management and pedestrian and cyclist facilities), but not including carparking ▼ land and facilities for stormwater management, and ▼ the costs of plan preparation and administration
GFA	Gross floor area
Greenfield	Underdeveloped land that is suitable for urban development, usually located in the fringe areas of existing urban development and requiring significant provision of new infrastructure and services to facilitate development
Growth Centres Development Code	Growth Centres Commission, <i>Growth Centres Development Code</i> , October 2006
IPART	Independent Pricing and Regulatory Tribunal
IPART Benchmark report	IPART, <i>Local Infrastructure Benchmark Costs – Costing Infrastructure in Local Infrastructure Plans, Final Report</i> , April 2014.
MPIP	Marsden Park Industrial Precinct
MPP	Marsden Park Precinct
Net developable area (NDA)	The land occupied by development, including internal streets plus half the width of any adjoining access roads that provide vehicular access, but excluding public open space indicated on the land use zoning or precinct plan, and other non-residential and non-industrial zoned land
Nexus	The connection between the demand created by the new development, and the public facilities provided which is assessed to ensure that equity exists for those funding the facilities
NWPGA	North West Priority Growth Area (formerly North West Growth Centre)

Plan administration costs	<p>Plan administration costs are those costs directly associated with the preparation and administration of the contributions plan. These costs represent the costs to a council of project managing the plan in much the same way as the project management costs that are incorporated into the cost estimates for individual infrastructure items within a plan. Plan administration costs may include:</p> <ul style="list-style-type: none"> ▼ background studies, concept plans and cost estimates that are required to prepare the plan, and/or ▼ project management costs for preparing and implementing the plan (eg, the employment of someone to coordinate the plan).
Practice Note (2014)	NSW Planning and Infrastructure, <i>Revised Local Development Contributions Practice Note – For the assessment of Local Contributions Plans by IPART</i> , February 2014
Precinct planning	Precinct planning establishes the land use zonings for residential and non-residential development, open space and infrastructure in new land-release areas, and facilitates the planning and delivery of infrastructure needed to service and support new development in NSW
RMS	NSW Roads and Maritime Services
Section 94 contributions	<p>Contributions imposed by way of a condition of development consent or complying development, which can be satisfied by:</p> <ul style="list-style-type: none"> ▼ dedication of land ▼ monetary contribution ▼ material public benefit, or ▼ a combination of some or all of the above
SEPP	State Environmental Planning Policy
Terms of Reference	Terms of Reference provided to IPART by the Premier of NSW on 30 September 2010 which outline IPART's role to assist with the preparation of revised contributions plan guidelines, and to assess and report on reviewable contributions plans against the guidelines and EP&A Regulation
Works-in-kind (WIK)	Construction or provision by a developer of the whole or part of a public facility identified in a work schedule in a contributions plan, the agreed cost of which is offset against contributions payable by the developer under the plan