



**A Case Study:
Berrimah Business Park
Stormwater Management
& Planning Issues**

Acknowledgements:

The EPA wishes to acknowledge the assistance provided by staff of the Department of Lands and Planning, including Development Assessment Services which provides secretariat services to the Development Consent Authority, the Department of Natural Resources, Environment, The Arts and Sport and Darwin City Council, in particular their prompt response in providing information and making department files available for review during this inquiry.



Acronyms

At the time of completing this report, NT Government Department names had changed. This report has used the names of Departments as they existed at 24 August 2012.

BBP	Berrimah Business Park
DAS	Development Assessment Services, a division of DLP
DCA	Development Consent Authority
DCC	Darwin City Council
DLP	Department of Lands and Planning
EPA	Environment Protection Authority
SLP	Strategic Lands Planning, a division of DLP
NRETAS	Department of Natural Resources, Environment, The Arts and Sport
NT	Northern Territory
RND	Road Network Division, a division of DLP
<i>SCLU Act</i>	<i>Soil Conservation and Land Utilisation Act</i>
<i>WMPC Act</i>	<i>Waste Management and Pollution Control Act</i>

1. Introduction

On 27 October 2011 the Environment Protection Authority (EPA) received a letter from the Hon. Gerry Wood MLA raising public concerns within his electorate about the potential environmental impacts of stormwater discharge from the Berrimah Business Park (BBP) development, which had been under construction since October 2010. Stormwater from the development flows into Ironstone and Knuckey Lagoons (Figure 1), two urban wetlands with special conservation values within Darwin and its surrounds. The concerns were twofold:

- the potential for pollution of the Lagoons; and
- the potential for downstream flooding of Knuckey Lagoon area, which includes residential areas.



Figure 1. The location of Ironstone and Knuckey Lagoons relative to the Berrimah Business Park development. Dotted lines show storm water drainage lines.

With regard to concerns about flooding, Cyclone Carlos, a category 1 cyclonic system, had resulted in a three-day rainfall of 600 mm when it passed close to Darwin earlier in the year (15 to 17 February 2011). The Knuckey Lagoons rural residential areas were threatened with flooding, creating local concerns about the consequences of adding more stormwater to a system that was potentially at its limits. The referral to the EPA included photos demonstrating that there were large volumes of water lying in the area at the time.

The EPA is empowered under the *Environment Protection Authority Act* to conduct inquiries for the purpose of advising the Minister, business and the community about ecologically sustainable development in the Territory.

The EPA's preliminary enquiries, involving a review of the Department of Lands and Planning (DLP) files covering the development application for the BBP, suggested that the risk of flooding downstream of the development would not increase as a consequence of the site's stormwater drainage works. The EPA established an inquiry on 18 November 2011 to consider the matters raised in the public referral, however as it progressed it became apparent that there were broader

implications for urban stormwater management and the planning system in the Northern Territory that were worthy of investigation as a case study.

2. Context

The BBP development is situated on Part Portion 02235 Stuart Highway, Hundred of Bagot on the northern (outbound) side of the Stuart Highway just short of the intersection with Vanderlin Drive and Berrimah Road (Figure 1). It lies on the south-east approach to Darwin International Airport. The site is 17.5 hectares with frontage to the Stuart Highway of approximately 800 metres. The entire Portion 2235 comprises 80 hectares in a backward 'L' shape, with the majority of the undeveloped land extending northward parallel to Vanderlin Drive. The land is situated within the municipality of Darwin City Council (DCC).

The site drains naturally toward a swale along the western side of Vanderlin Drive, where water discharges through a culvert under Vanderlin drive and flows towards Ironstone and Knuckey Lagoons (see Figure 1 for indicative drainage lines).

Knuckey Lagoons are four natural depressions that fill with water and combine to make one large water body in the wet season. They have long been recognised as unique urban wetland areas and wildlife refuges, and are formally included in the Knuckey Lagoons Conservation Reserve, managed by the Department of Natural Resources, Environment, The Arts and Sport (NRETAS). Ironstone Lagoon lies between Knuckey Lagoons and the BBP. This complete area is within the municipality of Litchfield Shire. Hence the development is in one shire (DCC), and potential offsite environmental impacts are in another. Rural residences surround the lagoons, particularly on the north-eastern side. There are also various commercial or semi-commercial horticulture and animal production activities on surrounding lands.

The BBP site is beneath the airport runway eastern approach and is subject to aircraft noise. Until 2008 it was undeveloped land, zoned RD (Restricted Development). Zone RD was created to ensure development does not prejudice the safety and efficiency of the airport and to limit the number of people who reside or work in the area.

In 2007 an application was made to the Minister for Lands and Planning to amend the Planning Scheme by rezoning the complete 80 hectares of Portion 2235 from RD to C (Commercial) to permit development of the site for showrooms and bulky goods retail. Under the Minister's direction in 2008 the application was amended, resulting in approval for part of Portion 2235 (approximately 17.5 hectares with frontage to the Stuart Highway) to be rezoned to SD22 (Specific Use Zone Darwin No.22). This new zoning category permitted the land to be developed, subject to consent by the Development Consent Authority (DCA), for a direct outlet retail complex, so long as construction complied with the Australian Standard for acoustics of buildings subject to aircraft noise.

In 2009, a further application by the developer of BBP to amend the Planning Scheme by rezoning the site from SD22 to SD31 was approved by the Minister. This new zone broadened the opportunities for commercial development by removing the requirement for a direct outlet retail complex and increasing the possible range of commercial operations.

On 19 October 2009 the proponent submitted a further development application to the DCA to subdivide the 17.5 hectare part of Portion 2235 that had been rezoned SD31 into 39 lots, to enable the development of a range of commercial outlets including warehouse sales outlets, storage and dispatch facilities and bulk goods showroom sites.

On 18 December 2009 the DCA approved the application, subject to 20 detailed conditions, and issued Development Permit DP09/1022 (refer Appendix A). Several conditions were required to be met prior to the commencement of construction, including preparation of a schematic plan demonstrating all stormwater would be collected on site and discharged underground to DCC's stormwater drainage system to the requirements of the DCC and to the satisfaction of the DCA. These plans were provided to the satisfaction of the DCC and the DCA. Earthworks commenced in October 2010 and 12 months afterwards concerns were raised with the EPA.

Note: There have been subsequent development applications relating to the BBP, but they are not considered here as they are outside the scope of this report.


3. Information and material obtained for the inquiry

In conducting this inquiry the EPA accessed records and information from:

- DLP, for access to files of the Development Advisory Services (DAS) and Strategic Lands Planning (SLP). Development Advisory Services coordinates advice from relevant stakeholders, including developers, other government agencies and the public, for presentation to the DCA. The DCA determines applications for Development Permits for the subdivision or consolidation of land. SLP performs a similar service for the Minister with respect to rezoning applications, as it is the Minister who determines applications for amendments to the Planning Scheme. Further information was obtained from DLP to address questions arising during the course of the inquiry.
- DCC, in relation to its responsibilities with respect to subdivision developments within its municipal boundaries, including stormwater management.
- NRETAS regarding its provision of advice to the DCA on environmental protection matters associated with BBP.
- Litchfield Shire Council, regarding their input into the planning processes for BBP as it discharges stormwater water into Ironstone and Knuckey Lagoons within the Litchfield Shire.

Legislation, guidelines and other documents consulted are referenced in the footnotes where appropriate.

As required under s5A (2) of the *Environment Protection Authority Act*, comment was sought from government agencies whose operations are the subject of the EPA's advice contained in this report. Refer to Appendix C for a summary of the agencies' comments, including actions currently underway relevant to the advice in this report, and the EPA's related responses.



4. Land Development and Stormwater Management: Legislation and Administration

Stormwater management involves controlling the dynamics of run-off waters and the potential pollutants carried by them. When development creates impermeable surfaces on-site, such as roads, parking lots and buildings, or alters the topography and drainage patterns on land, it reduces the amount of rain water that can soak into the ground, increases surface run-off and can change the direction of runoff.

The Northern Territory does not have a single piece of legislation dedicated to managing stormwater drainage and offsite environmental impacts from urban developments. Responsibilities for stormwater management in the Northern Territory are shared between various departments of the NT Government and relevant local councils.

For new developments, the *Planning Act* administered by DLP provides for submissions to be made to the DCA on any issue associated with development applications. The *Planning Act* also requires that local councils are notified of development applications that relate to land within the specific municipality boundaries. In practice the DCA notifies all local councils of new development applications via weekly email notification. Government agencies provide advice to the DCA in relation to their administrative responsibilities and these may include matters concerning stormwater, flooding and other potential on- and off-site impacts. The NT Planning Scheme, which falls under the *Planning Act*, has provisions for regulating development in areas subject to onsite flooding or storm surge; however, it does not have provision to control off-site impacts such as off-site downstream flooding.

As part of functions under the *Local Government Act*, councils have primary responsibility for stormwater drainage associated with subdivision and roads within their local government areas. Of relevance to the BBP development, DCC has *Subdivision and Development Guidelines*¹, which include guidance on the council's requirements for accepting stormwater into its drainage systems. Litchfield Council is understood to be developing guidelines for subdivision developments within its boundaries.

Stormwater management of NT Government owned roads is covered by the *Control of Roads Act* administered by the Road Network Division (RND) of DLP. The main focus of this Act is the safety and effective management of roads, rather than minimising the impact road construction may have on the environment.

In addition, some responsibilities for stormwater management may also be attributed to NRETAS, which has administrative responsibility for the *Water Act* and the *Waste Management and Pollution Control (WMPC) Act*. These have provisions applicable to the control of storm water pollution and discharge. The *Water Act* broadly provides for the protection and managed use of water resources. The *WMPC Act* provides for the protection of the environment through effective waste management and pollution prevention and control practices.

¹ Subdivision and Development Guidelines, prepared by Technical Services Department of Darwin City Council, September 2005.

NRETAS also administers the *Soil Conservation and Land Utilisation (SCLU) Act*, which has some relevance to development approvals and management of stormwater management. The *SCLU Act* provides for the prevention of soil erosion and for the conservation and reclamation of soil and is supported by 'Erosion and Sediment Control Guidelines Built Environment'² which recommend a control plan be developed for all construction sites to minimise soil erosion and sediment escape, particularly in vulnerable areas. These guidelines have no statutory status and are thus not enforceable.

For new development, during the construction and up to the handover phase, stormwater drainage systems and management are controlled by conditions included by the DCA on Development Permits. These generally require stormwater systems to be constructed in accordance with local government requirements, as ownership of the stormwater infrastructure post development normally transfers to the local council or where it connects into main road drainage infrastructure to RND and to the satisfaction of the DCA.

5. Findings Specific to Berrimah Business Park Development

In relation to the BBP development, the EPA found on reviewing the material provided by relevant government agencies, and investigating the specific concerns raised in the public referral that:

- The DCA did formally consider the impact of the development on stormwater discharge. It required the developer, by way of placing conditions on the Development Permit, to submit a stormwater system design plan and engineering specifications to the appropriate bodies for approval, these being:
 - a) DCC, the body responsible for underground drainage within the subdivision and the body which would take ownership and control of the stormwater infrastructure upon completion of the development. The DCC confirmed that it had approved the stormwater system design plan.
 - b) RND, which is responsible for care and responsibility for Vanderlin Drive and Stuart Highway drains which border the subdivision. At the time of writing, RND confirmed the works were completed but that it has not yet given formal approval for the works.
- These two bodies will be required to confirm with the DCA at the completion of construction that these matters are to their satisfaction, at which time the DCA will determine whether its requirements have been satisfied.
- Conditions placed on the Development Permit by the DCA as a result of advice received from DCC and RND can be reasonably expected to minimise stormwater discharge into the Lagoons area, so that flooding in the Knuckey and Ironstone Lagoons area as a result

² Sourced from http://www.lrm.nt.gov.au/data/assets/pdf_file/0019/12916/BuiltEnvironment.pdf

of the approved development is unlikely. In particular, RND required that post-construction flows be maintained at pre-construction flow levels. This was demonstrated in the developer's stormwater system calculations, which predicted that the stormwater discharge from BBP after the development was complete would be less than the pre-development discharge.

- There is no documented evidence that the potential for increased general pollution and nutrient loadings in the stormwater discharge from the development was considered by the DCA. There is also no documented evidence that this was considered by agencies in developing their advice for the DCA. However NRETAS did advise the EPA by letter that when drafting its advice to the DCA it did consider the off-site impacts and it determined that the development was unlikely to have any significant impact on water quality downstream of the site.³
- NRETAS' assessment that water quality was unlikely to be impacted on by the development was a factor in it requiring no specific monitoring or research to detect possible environmental impacts on the lagoons of the BBP development.⁴
- The EPA accepted the decisions of NRETAS to be reasonable ones, given the proposed use of BBP in the context of the diverse forms of land use already taking place in all surrounding areas.
- In approving the development application, the DCA applied a condition on the permit requiring that appropriate sediment and erosion control measures be used. In October 2011 sediment was reported to be escaping the site. Remedial action was coordinated by DAS with technical advice provided by NRETAS. DAS advised the EPA it was satisfied that the remedial works had addressed the sediment problem.
- Litchfield Council did not make submissions with respect to any of the planning applications to the BBP. The EPA is satisfied that Litchfield Council was notified by DLP of the rezoning and development applications.

6. Systemic issues in the planning process with environmental implications

The BBP case study provided various insights into how the planning process operated to minimise the environmental impacts of development, on- and off-site.

The diverse range of statutory and administrative requirements concerning the environment that developers and DCA are expected to address and comply with are fragmented and arguably onerous, and rather than being uniform, need to be tailored to the specific context of each development. Overcoming this fragmentation may help to improve environmental outcomes of planning decisions generally. In assessing the potential costs and benefits of doing so, creating

³ NRETAS, letter to EPA 20 March 2012.

⁴ Verbal advice from NRETAS, 21 June 2012.



increased certainty of process for developers, and meeting informed public expectations, are clearly critical factors to examine.

6.1 Regulation of stormwater to protect the environment

Urban stormwater can adversely impact on local environments and the social well-being of residents in numerous ways. Flooding can severely disadvantage people and alter the human environments they have created to enrich their lives. The effects on stormwater inundation on natural ecosystems may be short-lived and minor by comparison. However, stormwater may transport a variety of pollutants from the urban environment into the waterways, and these have the potential to reduce water quality and impact on aquatic ecosystems.

In the Northern Territory the environmental impacts of stormwater flows are managed in somewhat piecemeal fashion. Individual development plans concerning stormwater issues are approved, perhaps effectively, but without the benefits of overarching stormwater management goals or plan. While environmental legislation aims to prevent pollution of the environment, it provides no guidance and sets no standards for the construction, maintenance and use of stormwater systems aimed at minimising adverse impacts on the environment. The objectives of existing legislation include environmental protection within the *WMPC Act* and beneficial uses in the *Water Act*, which are more about sustaining high levels of water quality than truly minimising adverse impacts of development.

In a recent report on the Darwin Harbour Water Quality Protection Plan, NRETAS noted that runoff from urban and rural areas, and sewage discharges, were primary sources of pollution, yet some of the Harbour's greatest management challenges. The report predicted that in the longer term, the projected development in the Darwin Harbour catchment has the potential to increase pollutant loads into the harbour by 31 – 107%, based on the 'business-as usual' approach. In addition the report indicated that the predicted pollution loads could be reduced by implementing a combination of interventions, such as, water sensitive urban design, the implementation of stormwater management measures and best practice management.⁵

Planning controls are the primary means of managing stormwater at present, and the priority attributed to minimising impacts on the environment and maintaining high water quality are unclear. The immediate concerns are the collection and safe distribution of stormwater, which is understandable. However, there is an increasing public expectation that the environmental implications of water management will be better integrated into the planning assessment procedures, demonstrated by the increasing focus in Australian jurisdictions to an holistic approach to planning and design of urban developments that aims to minimise impacts on the natural water cycle and protect the health of aquatic ecosystems. Nowhere is this more apparent than in Darwin Harbour, where over the last decade there has been increased recognition that the Harbour itself needs to be managed holistically, to sustain the many benefits it provides to people, the economy and the environment. This is difficult to achieve in the highly fragmented control systems that have evolved over time. Stormwater is a central and important component of environmental health in Darwin Harbour, making it difficult to avoid the conclusion that a more holistic and united approach to stormwater management is needed.

⁵ 'Phase 1 Report - Towards the Development of a Water Quality Protection Plan for the Darwin Harbour Region', p.37.

Improved management of stormwater, to better integrate environmental objectives to minimise stormwater impacts on aquatic ecosystems, and minimise flooding, will eventually involve considerations of the interactions between the hydrological, geomorphological, ecological, and soil elements of the environment.⁶ An adaptive management approach to establishing standards and guidelines for improved stormwater management, based on current knowledge, should be amenable to continual review and upgrade as new knowledge is generated.

Recommendation 1: That the Northern Territory government work with local government, developers and other key stakeholders to assess the potential costs and benefits of adopting a less fragmented approach to stormwater management.

6.2 Improving regulation of planning activities impacting on waterways

Development in the Darwin rural area is both expanding and cumulative. The flat topography and high rainfall creates a landscape of rivers, creeks, streams, lagoons, swamps and perennial channels, defined as waterways in the *Water Act* (refer Appendix B). It regulates a range of activities that may impact adversely on wetland and waterway environments. For example, interference with a natural waterway or obstructing the natural flow of water in a waterway is prohibited without specific authorisation.⁷ It nominally protects the natural flow of water in a watercourse by prohibiting, without a licence, activities which could restrict or increase flows that could cause detrimental flooding.

The definition of a waterway within the *Water Act* is comprehensive covering natural systems, that are intermittent and permanent and modified systems and this has made it difficult to determine what actions would constitute interference with a waterway or obstruction of the flow. It is particularly difficult when applied to urban or semi-urban developments where there are often constructed or modified natural water ways. This ambiguity constrains enforcement action and creates uncertainty about the type of advice that should be offered on planning applications which will impact on a waterway to some degree. Clarification of these two matters in the *Water Act* seems long overdue.

Recommendation 2: That the *Water Act* be amended to clarify:

- what constitutes a waterway
- what constitutes interference with a waterway, and
- what constitutes an act likely to obstruct the flow of water in a waterway.

6.3 Improving the quality of planning decisions

In the Territory, planning decisions for zoning and development are made by the Minister for Planning and the DCA respectively. The DCA is made up of local council aldermen and experienced individuals appointed by the Minister. The DCA also receives “advice” in the form of

⁶ ‘Australian Guidelines for Stormwater Management, 2000, available at: <http://www.environment.gov.au/water/publications/quality/pubs/urban-stormwater-management-paper10.pdf>.

⁷ *Water Act*, section 15.

submissions during exhibition of planning applications from a wide range of interests, with varying technical credentials and motivations for providing advice. The DCA's discretionary power to take or reject any advice is essential to its ability to function and to meet its primary goal of accepting or rejecting development proposals in an expedient and cost-effective manner. It is ultimately accountable and responsible for its decisions.

The provision of high quality advice to the DCA can and should assist its decision-making processes, and government agencies are a key conduit for providing advice specific to the legislation they administer. Yet the resources allocated to agencies for this purpose appear limited, and there appears to be limited guidance in some agencies about what is expected of them. Despite increased public interest in planning processes and outcomes, there is a dearth of public statements regarding specific input from government agencies into the planning process. There appears to be a strong case for the DCA to better inform agencies and the public about the types of advice and level of details it needs, in tendered advice for its purposes. There is also a need to ensure agency staff contributing expert advice to DCA, are trained in the practical aspects of the planning processes. The quantity and quality of agency input into the planning processes will ultimately be budget-driven, and perhaps more resources will be needed.

Recommendation 3: That the DCA clarify its expectations of government agencies in providing advice on planning applications, and that the relevant departments assess the adequacy of training and resources to meet this expectation.

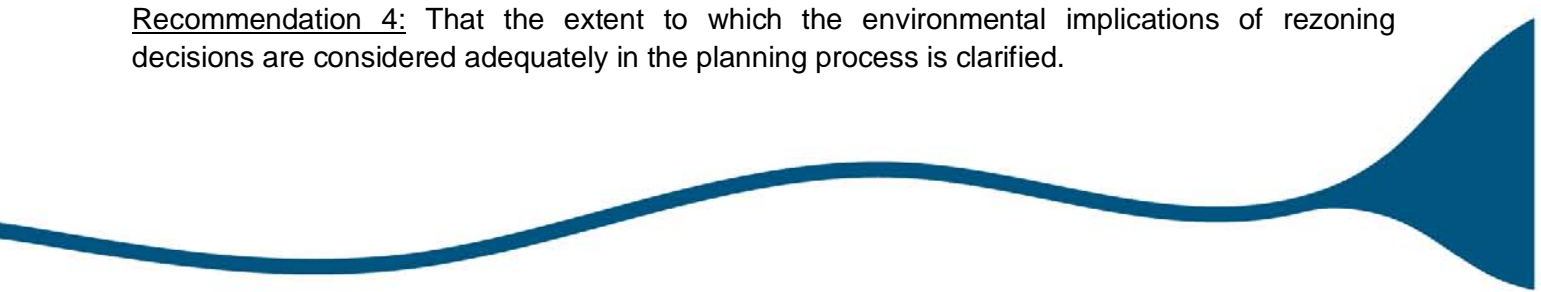
6.4 Improving environmental outcomes of planning decisions

During the EPA's review of planning processes, it became apparent that there is no statutory requirement for the environment impacts, both on and off a future development site, to be taken into account during consideration of applications to rezone land.

Under the *Planning Act*, the intended use of land is determined by its zoning. This is often established years before the land is about to be developed when public values and expectations were different. The shifting baseline of public values is a fundamental dilemma in planning processes around the world. What may have appeared to have been a reasonable goal for land use years earlier, based on available knowledge, will invariably change over time. Zoning and rezoning land to track changing public values and expectations, is part of the planning process.

But under the *Planning Act*, rezoning does not require consideration of how the rezoning itself may ultimately impact on the environment. At present the Minister is not required to take into account what the environmental impacts of a development may be if an alternative zoning category is applied to land. This may be a regulatory oversight. It is likely that amending the *Planning Act* to require the Minister to take similar matters into account, when considering rezoning of land, as are required to be taken into account by the DCA when considering development applications would help to provide for improved environmental outcomes of developments. The matters to be taken into account for development applications include a range of environmental considerations and potential impacts on natural, social, cultural or heritage values.

Recommendation 4: That the extent to which the environmental implications of rezoning decisions are considered adequately in the planning process is clarified.



6.5 Improving accountability and transparency in planning decisions

When the BBP development was first rezoned in 2008 it attracted strong opposition particularly from the Department of Defence and the Darwin International Airport. They raised concerns about community safety and the safety of aircraft passengers and crew, among other matters. They raised the same objections when the development application was exhibited for public submissions. The Planning Authority's reasons for not upholding the objections were not made clear. It is likely that the provision of more detailed rationale for decisions would help to build public confidence in the planning system.

Recommendation 5: That when planning decisions are not routine and involve high public interest the Planning Authority provide more detailed rationale for its decisions.



APPENDIX A

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NORTHERN TERRITORY OF AUSTRALIA

Planning Act - sections 54 and 55

DEVELOPMENT PERMIT

DP09/1022

DESCRIPTION OF LAND THE SUBJECT OF THE PERMIT

Portion 02235

Hundred of Bagot

651 STUART HWY, BERRIMAH

APPROVED PURPOSE

To use and develop the land for the purpose of a subdivision to create 39 lots in accordance with the attached schedule of conditions and the endorsed plans.

BASE PERIOD OF THE PERMIT

Subject to the provisions of sections 58, 59 and 59A of the Planning Act, this permit will lapse two years from the date of issue.



PETER McQUEEN
Delegate
Development Consent Authority

18/12/2009

DEVELOPMENT PERMIT

DP09/1022

SCHEDULE OF CONDITIONS**CONDITIONS PRECEDENT:**

1. Prior to endorsement of plans and prior to the commencement of works (including site preparation) the applicant is to prepare a comprehensive Traffic Impact Study addressing and satisfying all related requirements as specified in parts (a) to (e) of the Department of Planning and Infrastructure's letter dated 20 November 2009, to the satisfaction of the consent authority.
2. Prior to endorsement of plans and prior to the commencement of works (including site preparation) the owner/ developer must enter into a written agreement with the Department of Planning and Infrastructure and Darwin City Council with regard to the treatment of the proposed roads/ Stuart Highway intersections, to the satisfaction of the consent authority.
3. Prior to endorsement of plans and prior to the commencement of works (including site preparation), the applicant is to prepare a Traffic Management Plan to address the impact of proposed works on the public bus network and measures to ensure the continued operation of the network as required by Road Network Division of the Department of Planning and Infrastructure, to the satisfaction of the consent authority.
4. Prior to endorsement of plans and prior to the commencement of works (including site preparation), the applicant is to prepare a schematic plan demonstrating all stormwater to be collected on the site and discharged underground to Council's stormwater drainage system, to the requirements of Darwin City Council and to the satisfaction of the consent authority.
5. Prior to the commencement of works (including site preparation) a full set of amended plans to the satisfaction of the consent authority must be submitted to and approved by the consent authority. When approved, the plans will be endorsed and will then form part of the permit. The plans must be drawn to scale with dimensions and three copies must be provided. The plans must be generally in accordance with the plans submitted with the application but modified to show changes to the proposed/ Stuart Highway intersections as a result of the requirements of conditions 1 & 2 of this permit.

GENERAL CONDITIONS:

6. The subdivision as shown on the endorsed plans must not be altered without the further consent of the consent authority.

7. Before the use/ occupation of the development starts, all works identified within the Traffic Impact Study as required by Condition 1 of this permit, and as a result of the written agreement between as required by condition 2 of this permit, are to be undertaken to the requirements of, and at no cost to, Darwin City Council and/ or the Department of Planning and Infrastructure as the case may be, to the satisfaction of the consent authority.
8. All existing and proposed easements and sites for existing and required utility services must be vested in the relevant authority for which the easement or site is to be created on the plan of subdivision submitted for approval by the Surveyor General.
9. The owner of the land must enter into agreements with the relevant authorities for the provision of water supply, drainage, sewerage facilities, electricity supply and telecommunications to each lot shown on the endorsed plan in accordance with the authorities requirements and relevant legislation at the time.
10. The developer shall contact on <http://www.telstrasmartcommunity.com> prior to any work commencing to facilitate the installation of the Telstra Network.
11. Any developments on or adjacent to any easements on site shall be carried out to the requirements of the relevant service authority to the satisfaction of the consent authority.
12. Engineering design and specifications for the proposed and affected roads, intersections, stormwater drainage, vehicular access, pedestrian/ cycle corridors and streetscaping are to be to the technical requirements of Darwin City Council and/ or the Department of Planning and Infrastructure as the case may be, to the satisfaction of the consent authority and all approved works constructed at the owners expense.
13. The owner/ developer shall:
 - (a) remove disused vehicle and/ or pedestrian crossovers;
 - (b) provide footpaths/ cycleways;
 - (c) collect stormwater and discharge it to the drainage network; and
 - (d) undertake reinstatement works;all to the technical requirements of and at no cost to Darwin City Council and/ or the Department of Planning and Infrastructure as the case may be to the satisfaction of the consent authority.
14. Landscaping and street lighting shall be designed and constructed to the requirements of Darwin City Council and/ or the Department of Planning and Infrastructure as the case maybe, and are subject to any height limits requirements of the Darwin International Airport, to the satisfaction of the consent authority and all approved works constructed at the owners expense.
15. All proposed roads and public open space reserves to be created on the plan of subdivision submitted for approval by the Surveyor General must be dedicated to the relevant Northern Territory or local government authority.
16. Soil erosion control measures must be employed throughout the construction stage of the development to the satisfaction of the consent authority.
17. The site must be appropriately engineered, graded and contoured to eliminate the need for any rear of lot drainage and to ensure all stormwater drainage is directed away from the Stuart

Highway road reserve, to the requirements of Darwin City Council and/ or Department of Planning and Infrastructure as the case may be, to the satisfaction of the consent authority.

18. The service road frontage (Stuart Highway) is to be appropriately fenced in accordance with Road Network Divisions standards and requirements to deter unauthorised vehicular and/ or pedestrian movement. The minimum standard required is an ARC Pool Safety Fentts fence 1.50 metres high in accordance with Standard Drawing C(S) 1305 or approved equivalent.
19. All proposed works within, or impacting upon, the Stuart Highway road reserve are to be designed, supervised and certified on completion by a practising and registered Civil Engineer in accordance with the standards and specifications of the Department of Planning and Infrastructure, to the satisfaction of the consent authority.
20. Before issue of titles and pursuant to section 34 of the Land Title Act, a Caution Notice shall be lodged with the Registrar General on the parent parcel to include the following advice on all proposed lots indicated on the endorsed drawings. The Caution Notice is to state that: This allotment is subject to aircraft noise and any building is required to be constructed to comply with AS2021-2000 Acoustics Aircraft noise intrusion Building siting and construction (AS2024). Evidence of lodgement on the parent parcel shall be provided to the satisfaction of the consent authority.

NOTES:

1. A Permit to Work within a Road Reserve may be required from the Manager, Road Operations, Road Projects Division before commencement of any work within the Stuart Highway road reserve.
2. PAWC advise that:
 - (a) two connections will be required to connect an internal ring main, with nominal diameter of at least 225mm, to the nearby existing DN300 MSCL line; and
 - (b) new sewer reticulation infrastructure will also be required to connect to nearby sewer maintenance hole on line L6#2919.

APPENDIX B

Extract from *Water Act*, Section 4(1)

4 Interpretation

(1) In this Act:

waterway means:

- (a) a river, creek, stream or watercourse;
 - (b) a natural channel in which water flows, whether or not the flow is continuous;
 - (c) a channel formed wholly or partly by the alteration or relocation of a waterway described in paragraph (a) or (b);
 - (d) a lake, lagoon, swamp or marsh, whether formed by geomorphic processes or modified by works:
 - (i) in which water collects, whether or not the collection is continuous; and
 - (ii) into, through or out of which a current (which forms the flow or part of the flow of a river, creek, stream or watercourse) passes, whether or not that passage is continuous;
 - (e) land on which, as a result of works constructed on a waterway described in paragraph (a), (b) or (c), water collects, whether or not the collection is continuous;
 - (f) land which is intermittently covered by water from a waterway described in paragraph (a), (b), (c), (d) or (e), but does not include any artificial channel or work which diverts water away from such a waterway;
 - (g) if any land described in paragraph (f) forms part of a slope rising from the waterway to a definite lip, the land up to that lip; or
 - (h) land declared under section 5(1) to be a waterway.
- (2) In this Act, a reference to a waterway includes a reference to a part or portion of a waterway.
- (3) The following are the beneficial uses of water:
- (a) agriculture – to provide irrigation water for primary production including related research;
 - (b) aquaculture – to provide water for commercial production of aquatic animals including related research;
 - (c) public water supply – to provide source water for drinking purposes delivered through community water supply systems;
 - (d) environment – to provide water to maintain the health of aquatic ecosystems;
 - (e) cultural – to provide water to meet aesthetic, recreational and cultural needs;
 - (f) industry – to provide water for industry, including secondary industry and a mining or petroleum activity, and for other industry uses not referred to elsewhere in this subsection;
 - (g) rural stock and domestic – to provide water for the purposes permitted under sections 10, 11 and 14.

5 Minister may declare land to be waterway, &c.

- (1) The Minister may, by notice in the *Gazette*, declare any land not already a waterway:
 - (a) over which water collects or flows, whether or not the collection or flow is continuous; or
 - (b) adjacent to land that is otherwise a waterway,
 - (c) to be a waterway for the purposes of this Act.
- (2) The Minister shall not make a declaration under subsection (1) unless:
 - (a) the Minister is satisfied that:
 - (i) the declaration has been applied for by a person who, if the land were a waterway, would have the right to take and use water from it under section 10 or 11;
 - (ii) the applicant has caused notice of the application to be published in a newspaper circulating generally in the area in which the land is situated; and
 - (iii) the applicant has caused notice of the application to be given or sent by post to:
 - (A) the owner and the lawful occupier of the land;
 - (B) the council of the municipality in which the land is situated, if it is situated in a municipality; and
 - (C) the responsible authority in relation to a planning area, if any, in which the land is situated; and
 - (b) the Minister has considered all submissions on the application made within 60 days after the publication or giving of notice of the application under paragraph (a)(ii) or (iii), whichever is the later.
- (3) The Minister may require further information in relation to an application to be provided by the applicant.
- (4) A copy of a request made under subsection (3) shall be given or sent by post to all persons who, in the opinion of the Minister, are affected by the request.
- (5) The Minister may, in writing, as a condition precedent to the Minister making a declaration under subsection (1), require a person who:
 - (a) owns land on the declared waterway; or
 - (b) who will benefit from the declaration,
 to pay the amount of compensation specified by the Minister to another person who:
 - (c) owns land on the declared waterway; or
 - (d) will suffer detriment as a result of the declaration.
- (6) The Minister may, by notice in the *Gazette*, declare coastal waters of the Territory (within the meaning of the *Coastal Waters (Northern Territory Powers) Act 1980* of the Commonwealth), to be tidal water for the purposes of this Act.

APPENDIX C

NT Government agency comments on draft of this EPA Report, *A case study – Berrimah Business Park: stormwater management and planning issues*

Comments were sought and received from the:

- Department of Lands, Planning and the Environment (DLPE)
- Department of Land Resource Management (DLRM).

Section of draft report	Agency comment	EPA's response
<p>Recommendation 1: That the Northern Territory Government assess the potential costs and benefits of adopting a less fragmented approach to stormwater management.</p>	<p>DLPE: While the primary responsibility for stormwater management lies with local government, there are instances when a more integrated approach to stormwater drainage could yield benefits. DLPE is committed to ensuring that the potential environmental impacts of stormwater discharge are appropriately managed.</p>	Acknowledged.
	<p>DLRM: Department interprets recommendation to propose agencies work with local government, developers and other key stakeholders to agree on a strategy for management of stormwater in a development context.</p> <p>Department currently in discussion with DLPE to clarify aspects of the NT Planning Scheme aimed at requiring developers to use suitably qualified professional advice at the planning application stage. Discussions will consider improvements via changes to current laws and regulations and the capacity of agencies to resource improved arrangements.</p>	<p>Amended original recommendation to clarify objective.</p> <p>Acknowledged action being taken.</p>

<p>Recommendation 2:</p> <p>That the <i>Water Act</i> be amended to clarify: what constitutes a waterway what constitutes interference with a waterway, and what constitutes an act likely to obstruct the flow of water in a waterway.</p>	<p>DLRM: Department's opinion is the definition of a waterway does not include all lakes, lagoons, swamps or marshes, only those standing bodies of water that are directly connected to a river, creek, stream or watercourse. There may be a general perception that the <i>Water Act</i> should apply to all standing water bodies and Department will identify whether Government wishes to pursue this matter. There may be a need to amend the Act to clarify what constitutes interference of a waterway under s15. There may also be a need to provide clearer linkage between s15 and s40 in regards to obstruction of a waterway.</p>	<p>Considered amending the recommendation but decided that clarity is needed for community and for that reason the EPA stands by the recommendation.</p>
<p>Recommendation 3:</p> <p>That a review be carried out, to clarify the role and expectations of government agencies in providing advice on planning applications and the training and resources for this purpose.</p>	<p>DLPE: DAS coordinates comments from agencies and local government councils when formulating recommendations to the DCA. DAS recommendations to the DCA will only be as good as the advice provided by areas of government responsible for stormwater management. Department has undertaken to work with agencies and councils to improve advice about stormwater management and planning issues to ensure the DCA is better informed.</p>	<p>Acknowledged action being taken.</p> <p>To provide greater clarity the EPA amended its draft recommendation to:</p> <p>That the DCA clarify its expectations of government agencies in providing advice on planning applications and that the relevant departments assess the adequacy of training and resources to meet this expectation.</p>
	<p>DLRM: Recommendation is supported.</p>	<p>Acknowledged.</p>

<p>Recommendation 4:</p> <p>That a review be carried out, to clarify the extent to which the environmental implications of rezoning decisions are considered adequately in the planning process.</p>	<p>DLPE: Department is currently working with DLRM to investigate the development of specific criteria to be assessed at the rezoning stage of development. This will include the potential for requiring detailed land suitability information to be provided at the rezoning stage of development and the effect of development on that land and other land.</p>	<p>Acknowledged action being taken.</p> <p>To provide greater clarity the EPA amended its draft recommendation to:</p> <p>That the extent to which the environmental implications of rezoning decisions are considered adequately in the planning process is clarified.</p>
	<p>DLRM: Recommendation is supported.</p>	<p>Acknowledged.</p>
<p>Recommendation 5:</p> <p>That the planning authority provide more comprehensive rationales for its decisions, particularly in respect to contested planning applications, and examines what processes may lead to increased transparency on behalf of all participants providing evidence in planning assessments.</p>	<p>DLPE: Following a number of recent decisions of the consent authority being appealed to the Lands, Planning & Mining Tribunal, it has become apparent that the reasons given by the consent authority for determination must be increasingly robust and provide clear reasoning behind the decisions of the authority. This will better support the decisions of the consent authority and lead to increased transparency in the planning process. Department fully supports the finding and will act on this issue.</p>	<p>Acknowledged action being taken</p> <p>To provide greater clarity the EPA amended its draft recommendation to:</p> <p>That when planning decisions are not routine and involve high public interest the Planning Authority provide more detailed rationale for its decisions.</p>
	<p>DLRM: Recommendation is supported.</p>	<p>Acknowledged.</p>
<p>Reference to 'SCLU (Soil Conservation & Land Utilisation) Guidelines'</p>	<p>DLRM: The correct title of the guidelines is 'Erosion and Sediment Control Guidelines Built Environment'.</p>	<p>Error corrected in final report.</p>