

Appendix D – Environmental Risk Assessment and Mitigation Measures

The following section provides recommendation for mitigation measures in response to potential impacts identified in **Section 6** of the EIS. The structure of mitigation measures is based on the DPIE’s hierarchy of approaches for managing impacts identified in the *Draft Environmental Impact Assessment Guidance Series* released by DPE in June 2017, as:

- **Performance based measure** – identify performance criteria that must be complied with to achieve an appropriate environmental outcome but do not specify how the outcome is to be achieved.
- **Prescriptive measure** – require action to be taken or specify something that must not be done.
- **Management based measure** – identify one or more management objectives that must be achieved through the implementation of a management plan.

Following the implementation of appropriate mitigation measures as recommended, it is determined that the proposal will not result in any significant adverse impacts on the surrounding environment. The following table illustrates how the matters raised within the SEARs will be addressed.

This analysis comprises a qualitative assessment consistent with AS/NZS ISO 31000:2009 *Risk Management–Principles and Guidelines* (Standards Australia 2009). The level of risk was assessed by considering the potential impacts of the proposed development prior to application of any mitigation or management measures. In accordance with the SEARs, the Environmental Risk Assessment (ERA) addresses the following significant risk issues:

- The adequacy of baseline data;
- The potential cumulative impacts arising from other developments in the vicinity of the site; and
- Measures to avoid, minimise, offset the predicted impacts where necessary involving the preparation of detailed contingency plans for managing any significant risk to the environment.

Risk comprises the likelihood of an event occurring and the consequences of that event. For the proposal, the following descriptors were adopted for ‘likelihood’ and ‘consequence’.

Likelihood		Consequence	
A	Almost certain	1	Widespread and/or irreversible impact

B	Likely	2	Extensive but reversible (within 2 years) impact or irreversible local impact
C	Possible	3	Local, acceptable or reversible impact
D	Unlikely	4	Local, reversible, short term (<3 months) impact
E	Rare	5	Local, reversible, short term (<1 month) impact

The risk levels for likely and potential impacts were derived using the following risk matrix.

		LIKELIHOOD				
		A	B	C	D	E
CONSEQUENCE	1	High	High	Medium	Low	Very low
	2	High	High	Medium	Low	Very low
	3	Medium	Medium	Medium	Low	Very low
	4	Low	Low	Low	Low	Very low
	5	Very low	Very low	Very low	Very low	Very low

The results of the environmental risk assessment for the proposed development are presented in the below table and are based upon the range of technical and specialist consultant reports appended to the EIS. The table has directly related mitigation measures responding to each impact also based upon the range of technical and specialist consultant reports appended to the EIS.

N.B. 'O' – Operational; 'C' – Construction

‘Pe’ – Performance based mitigation measure; ‘Pr’ – Prescriptive based mitigation measure ‘Ma’ – Management based mitigation measure

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
Environmental Amenity	Reduced environmental amenity for the neighbouring development and site.	O	C	3	Medium	The design of the proposed built form, site layout, and landscape design permits visual permeability, privacy, enhances access to light, ventilation, and views.	Pr	Low
Visual Impact	Visual impacts from surrounding viewpoints to the proposed development.	O	C	3	Medium	No mitigation measures were identified given the predicted visual effects were assessed to be low. The design of the proposed built form appropriately responds to the relevant statutory controls and surrounding local character to ensure no visual impacts are generated that require mitigation.	Pr	Low
Transport	Impacts on road network from construction and operational phase.	C & O	C	4	Low	The TIA has not identified any adverse impacts requiring the implementation of mitigation measures.	Ma	Low

Noise and Vibration	Adverse construction and operational noise which impacts nearby sensitive receivers.	C & O	C	3	Medium	The following recommendations are identified within the NVIA to be implemented where feasible.	Ma	Low
						<ul style="list-style-type: none"> ▪ To control external sources of traffic noise, the building shell shall be constructed in accordance with the minimum complying constructions or higher. The design of the building shell for the entirety of the project site (including glazing selections, lightweight walls, roof, etc.) shall be reviewed by a qualified acoustic consultant and finalised prior to CC stage once detailed material selections have been made. ▪ Detailed acoustic review of mechanical plant items (in particular any which are located externally) is to be undertaken as part of the detailed design of the building. ▪ It is recommended that a project specific Construction Noise and Vibration 		

Management Plan be developed for the construction phase to assess potential impacts from the construction methodologies proposed, and to recommend appropriate management of construction activities once detailed construction methodologies have been finalised.

Water Management	Drainage design does not appropriately manage or treat water within the site.	O	C	3	Medium	The stormwater quality measures implemented into the development include:	Pr, Ma	Low
						<ul style="list-style-type: none"> ▪ <i>Oceanguards</i>: a catch basin insert installed in inlet pits to effectively remove trash, debris, and other pollutants from runoff. The <i>Oceanguard</i> proposed for the project are 900x900 type L2 with 200 micron filter system. These filter baskets will be installed in the last pits before discharging to the <i>Stormfilter</i> chamber as well as pits in the roads as per Council standard. 		

- Stormfilter: a proprietary device containing multiple cartridge units in a single system, with various filtration media to target site-specific pollutants, thereby suitable for larger catchments. Stormfilters will be installed in the OSD tanks as detailed in the engineering drawings except Road #3 tank.

In addition, landscape planting and vegetation buffers proposed along the edges of hard surface areas will enhance stormwater management to further reduce pollutants.

Ground and Groundwater Conditions	Impacts to soil resources.	C & O	C	4	Low	<p>Additional site-specific geotechnical subsurface investigation testing and analysis will be necessary prior to construction to confirm the preliminary recommendations in this report are appropriate for the proposed development.</p> <ul style="list-style-type: none"> ▪ Undertake a site-specific geotechnical investigation 	Pr	Low
------------------------------------------	----------------------------	-------	---	---	-----	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----	-----

(boreholes, lab testing, groundwater monitoring) prior to detailed design to confirm subsurface conditions and parameters.

- Determine the appropriate Salinity Management Response (SMR) in accordance with the Western Sydney Salinity Code of Practice and prepare a Salinity Management Plan for implementation during design and construction.
- Adopt and implement the additional comments and recommendations outlined in this report to guide excavation support, groundwater management, foundation design, durability, and construction staging.

Contamination and Remediation	Contamination is present on site and not appropriately managed or removed to make suitable for the	C	C	3	Medium	The PSI includes the following recommendations as part of the removal of potential contamination sources:	Pr, Ma	Low
--------------------------------------	----------------------------------------------------------------------------------------------------	---	---	---	--------	-----------------------------------------------------------------------------------------------------------	--------	-----

proposed
development.

- A hazardous materials building survey to determine the presence of ACM in building materials and inform any management controls required during demolition and redevelopment.
- A hazardous building material inspection of the waste materials (timber, metal, plastics, and paper) observed across the site surface and investigation of the underlying fill material prior to commencement of the earthworks program to quantify the extent of fill and assess the potential contamination risk to site workers during works and to classify the material for off-site disposal.

These recommendations will be implemented as part of the works to be carried out under the existing, activated consents.

Trees and Landscaping	Insufficient planting is proposed throughout the site.	O	C	4	Low	The proposed planting strategy outlined by the Landscape Plan will enhance the site amenity and not require any mitigation measures. Tree removal will occur under the existing consents	N/A	N/A
Ecologically Sustainable Development (ESD)	Sustainable design is not implemented into the proposed development design.	O	C	4	Low	The ESD strategies identified by E-Lab to be implemented into the proposed development will assist the project in achieving high levels of sustainability and environmental performance. No additional mitigation measures are required.	Pr	Low
Biodiversity	Impacts to ecological value and biodiversity is generated and not appropriately managed.	C	C	3	Medium	The following recommendations were identified to be implemented where necessary: <ul style="list-style-type: none"> To the fullest extent practicable, minimise disturbance to any native vegetation surrounding the site. Where possible, any trees to be retained should be protected in accordance with Australian Standard AS4970 – 2009 Protection of trees on 	Pr	Low

development sites, during construction, operation and decommissioning of the site compound.

- Soil transportation should be minimised within, into or out of the site to reduce the spread of weeds.
- Five priority weeds within the Greater Sydney LLS region (which includes the Blacktown City Council LGA) were identified within the site. Appropriate measures should be implemented to minimise the spread of these species.
- The man-made dam should be dewatered and decommissioned in accordance with a dam dewatering assessment.
- Protective fencing is to be provided around any trees or bushland to be retained to prevent damage. Fences are to be constructed at the drip-line of existing vegetation as a

minimum to prevent damage within the dripline/protection zone by limiting access into it.

- In the unlikely event that unexpected threatened species are identified during the project, works should cease, and an ecologist should be contacted for advice.

Waste Management

Waste generated at all stages of the project are not appropriately collected, stored and removed.

C & O

C

4

Low

Demolition & Excavation

Pr

Low

- Prior to the commencement of demolition works, the proponent is to provide to Council a Site Plan for the On-Site Storage of Materials at Demolition. The Plan will show in detail the location of each area within the compound, set aside for the segregated storage of all materials involved in the demolition of all buildings on the site.
- All excavated material removed from the site, as a result of the demolition of all buildings, must be classified in accordance with the

Department of Environment,
Climate Change and Water
NSW Waste Classification
Guidelines prior to their
removal, transportation, and
disposal to an approved waste
management facility. All
relevant details must be
reported to the PCA.

Social Impact	Positive and negative social impacts are not appropriately managed.	C & O	C	3	Medium	Additional SIA recommendations to further enhance positive impacts and mitigate residual negative impacts are provided below. These primarily relate to future detailed design, construction and operation of the proposal:	Ma, Pe, Pr	Low
						<ul style="list-style-type: none"> As recommended in the Design Report, explore opportunities during the detailed design phase to incorporate Connecting with Country initiatives into the detailed building exterior and interior design, in consultation with the local Aboriginal stakeholders. 		

- Explore opportunities to address community concerns and perceptions in relation to affordable housing. This could include providing facts and outlining the benefits of affordable housing in future community communication and engagement materials.
- Explore opportunities to implement contractual requirements for the construction contractor to enhance employment benefits and introduce training opportunities. These requirements may include establishing employment and procurement targets with a focus on local employment, diversity and inclusion.
- The construction contractor and the proponent are recommended to engage with developers involved in nearby concurrent developments to understand their construction timelines and activities. This

collaboration should aim to identify measures to reduce conflicts and reduce the risk of cumulative impacts. Strategies should be incorporated into a future Construction Management Plan (CMP).

- Develop and implement a communication and engagement strategy for the construction period as part of the future CMP to ensure effective and ongoing communication with the surrounding community, provide an opportunity for the community to express queries and concerns and enable the proponent or contractor to address any issues.
- Consider identifying opportunities to promote community interaction through the development's communal spaces to promote connection and cohesion. There is the potential for these activities to be delivered in

partnership with the Community Housing Provider engaged to manage the affordable housing component.

Flood Risk	Flood impacts present on site are not managed or reduced to ensure no risk to life or property.	O	D	4	Low	No mitigation measures are recommended above the previously approved drainage works which will be carried out under the existing, activated consents.	N/A	N/A
Bush Fire Risk	Bush fire risk is not addressed and the impacts to life and property are not minimised.	O	C	3	Medium	<p>The Bushfire Assessment includes the following recommendations as related to APZs, construction, landscaping, gas, emergency management, and access.</p> <p>APZs</p> <ul style="list-style-type: none"> At the commencement of construction works and in perpetuity all areas within the subject property shall be maintained as an Asset Protection Zone (Inner Protection Area) as detailed in the NSW Rural Fire Service's document 'Standards for Asset 	Pr, Ma	Low

Protection Zones' and
Appendix 4 of Planning for
Bush Fire Protection 2019.

Construction

- The proposed roofing and construction facing northwest, southeast and southwest on the buildings within Lot 1 shall comply sections 3 and 6 (BAL 19) under Australian Standard AS3959-2018 "Construction of buildings in bush fire-prone areas' and section 7.5 of "Planning for Bush Fire Protection - 2019".
- The proposed construction facing northeast on the buildings within Lot 1 shall comply sections 3 and 5 (BAL 12.5) under Australian Standard AS3959-2018 "Construction of buildings in bush fire-prone areas' and section 7.5 of "Planning for Bush Fire Protection - 2019".
- The proposed buildings within Lot 2 shall comply sections 3

and 5 (BAL 12.5) under Australian Standard AS3959-2018 "Construction of buildings in bush fire-prone areas' and section 7.5 of "Planning for Bush Fire Protection - 2019".

- The proposed roofing and construction facing northwest, northeast and southeast on the buildings within Lot 3 shall comply sections 3 and 7 (BAL 29) under Australian Standard AS3959-2018 "Construction of buildings in bush fire-prone areas' and section 7.5 of "Planning for Bush Fire Protection - 2019".
- The proposed construction facing southwest on the buildings within Lot 3 shall comply sections 3 and 6 (BAL 19) under Australian Standard AS3959-2018 "Construction of buildings in bush fire-prone areas' and section 7.5 of "Planning for Bush Fire Protection - 2019".

Landscaping

- That any new landscaping within the Asset Protection Zones is to comply with Table 7.4a of Planning for Bush Fire Protection 2019.

Emergency Management

That the bushfire emergency management plan to be prepared for each building and is to be consistent with the NSW Rural Fire Service *Guidelines for the Preparation of Emergency / Evacuation Plan*.

Access

- All proposed roads shall comply with the General Access Requirements as detailed in Table 5.3b of PBP 2019, specifically:
 - property access roads are two-wheel drive, all-weather roads;
 - traffic management devices are constructed to

not prohibit access by emergency services vehicles;

- maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;
 - where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;
 - the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.
-

- hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;
- hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning
- That the proposed road along the eastern boundary shall comply with the requirements for Perimeter Roads as detailed in Table 5.3b of PBP, specifically:
 - are two-way sealed roads;
 - minimum 8m carriageway width kerb to kerb;
 - parking is provided outside of the carriageway width;
 - hydrants are located clear of parking areas;

- curves of roads have a minimum inner radius of 6m;
 - the maximum grade road is 15 degrees and average grade of not more than 10 degrees;
 - the road crossfall does not exceed 3 degrees; and
 - a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.
- That all other roads shall comply with the requirements for Non-Perimeter Roads as detailed in Table 5.3b of PBP, specifically:
 - minimum 5.5m carriageway width kerb to kerb;
 - parking is provided outside of the carriageway width;
-

- curves of roads have a minimum inner radius of 6m;
- the road crossfall does not exceed 3 degrees; and
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

Aboriginal Cultural Heritage	Finding an unexpected Aboriginal object at the site during construction.	C + O	D	4	Low	As per the Aboriginal Objects Due Diligence Assessment (ADD) by Dominic Steele (2017), the proposed development can proceed subject to the implementation of an Unexpected Finds Process.	Ma	Nil
Environmental Heritage	Archaeological remains found onsite.	C	E	3	Very Low	The proposed development is to implement the Unexpected Finds Procedure where required. Should undocumented and substantial archaeological remains not identified by this HAA be unexpectedly discovered during excavation, work must cease in the affected area and an archaeologist contacted to assess	Ma	Nil

the finds. Depending on the nature of the discovery, Heritage NSW may be notified in writing in accordance with Section 146 of the *Heritage Act 1977*. Additional assessment and possible liaison with Heritage NSW may be required prior to the recommencement of excavation in the affected area.

Hazard and Risk	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
------------------------	-----	-----	-----	-----	-----	-----	-----	-----