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6 November 2019



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1.0 Introduction

An Environmental Impact Statement (EIS) was prepared on behalf of the proponent, Aspire Consortium, in support of a detailed State Significant Development Application (SSD DA-8903) for Stage 1 of the Ivanhoe Estate development in Macquarie Park. The EIS and accompanying documents were placed on public exhibition from 23 May 2019 to 19 June 2019.

Public exhibition occurred in accordance with the requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In total, thirty (30) submissions were received in response to the public exhibition of the EIS. These included submissions made by government agencies and authorities, organisations, and from the general public.

The Department of Planning, Industry and Environment (DPIE) also prepared a letter requesting additional information or clarification prior to the final assessment of the project.

Aspire Consortium and its consultant team have considered all issues raised in the submissions, and prepared a detailed response in this report and the accompanying documents, in accordance with Clause 85A of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation). A considered and detailed response to all submissions made has been provided in the accompanying documentation, including the response table in **Appendix S**, with the key issues outlined above expanded on in **Section 2.0** and additional information provided in **Section 3.0**.

In responding to and addressing the range of matters raised by government agencies and authorities, the Consortium has sought to refine the detailed design of the proposal to further demonstrate how the development can respond to those matters raised in the submissions. These design changes include:

- modifying Buildings A1 and C1 including the detailing of apartments to provide natural ventilation and increase the area of balconies, and the incorporation of wind protection measures in the ground plane as recommended;
- clarifying site preparation works including the extent and staging of bulk earthworks, tree removal and biodiversity offsets;
- removing the deceleration lane from Epping Road in-line with the changes to the Masterplan, and aligning public domain landscaping with the revised road network;
- amending the proposed amalgamation and subdivision of the Estate to account for the changes to the Masterplan, and the stratum subdivision of Building A1 and C1 to account for the minor design changes;
- revising the overall staging of Stage 1 works, which may be subject to further refinement pending any future Voluntary Planning Agreement entered into with Ryde City Council.

Section 2.0, 3.0 and 4.0 of this report and the accompanying documentation together provide an analysis and assessment of the proposed changes and the refined project more broadly. In summary, all environmental impacts of the proposed development remain consistent with the assumptions made under the Master Plan. The proposed development is considered to be an appropriate and high-quality outcome for the site.

Final measures to mitigate the impacts associated with the refined proposal are detailed in **Section 5.0**.

In summary, this application represents the first step in the delivery of the planned redevelopment of the Ivanhoe Estate and will provide the first integrated social and market housing development on the site. It will replace the existing social housing units on site, provide up to 740 new homes including independent living units and dual key units, and deliver integrated and complementary non-residential uses and public domain areas. The application has been made with consideration of the overarching Ivanhoe Estate Masterplan that shapes and guides future development on the site, and is consistent with the impacts modelled under the Masterplan and the associated overarching strategies developed for the Masterplan.

The environmental impacts resulting from the first stage of works are acceptable and are able to be managed. Given the planning merits of the proposal and its consistency with the Masterplan, the proposed development warrants approval by the Minister for Planning.

1.1 Concurrent Masterplan

The Stage 1 SSD DA is pursuant to the concurrent Masterplan (SSD 8707). This Masterplan establishes the framework for development on the site, as the overarching Concept Proposal to which all future detailed applications (such as this Stage 1 DA) will be pursuant. It is the intention of the Consortium that the Masterplan and this Stage 1 DA be assessed concurrently, however, should the determination of Stage 1 precede the Masterplan, the Consortium would raise no objections to this approach.

Following the public exhibition of proposed changes to the Masterplan between 23 May and 19 June 2019, a number of changes are to be made to the Masterplan to address comments received in submissions from agencies, authorities, and the general public, for an overall improvement to the publicly exhibited plan for the Estate. These changes comprise:

- reducing the total GFA from 278,000m² to 268,000m², resulting in a reduction from approximately 3,500 dwellings to 3,300 dwellings including 950 social dwellings.
- increasing the envelope setbacks to Epping Road to maximise the preservation of the Sydney Turpentine Ironbark Forest;
- deletion of the left in and left out deceleration lane to Epping Road;
- retention of additional existing trees across the Estate;
- improving the interface with the Shrimpton Creek corridor;
- redistributing GFA across the site in the form of increased building heights to enable the above design improvements.

The revised Masterplan has been replicated at **Figure 1**, including a comparison with the previously exhibited document.

The Stage 1 SSD DA has been amended in this response to be consistent with the vision established under the concurrent Masterplan, as explored in the following sections of this report.



Figure 1 Former Masterplan (above) and amended Masterplan (below) to which application is pursuant

Source: Bates Smart

2.0 Amendments to the proposal

A number of detailed design changes have occurred since the submission of the EIS and are proposed in accordance with Section 55 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation). These changes have occurred to align the proposed development with concurrent changes to the overarching Masterplan and in response to those matters raised by the Department and other government agencies and in public submissions, and are illustrated in the updated Architectural Plans and Landscape and Public Domain Plans at **Appendix A** and **B** respectively. These design changes are described below and, where relevant, assessed in **Section 3** of this report and the accompanying technical assessments.

Building A1

- The northern and western facades of some apartments within Building A1 will be detailed to include acoustic trickle ventilators, providing acoustic protection as well as natural airflow. This is detailed in the updated design report prepared by Bates Smart at **Appendix A**.
- The introduction of two (2) skylights for Level 22 Apartments 03 and 04 for improved amenity.
- The ground plane of the building has also been updated to incorporate wind protection measures, adopting the recommendations of CPP.

Building C1

- The lot area for Building C1 has been changed to 6,218m², to account for amended eastern lot boundary to Main Street (discussed further below). The setback between Building C1 and the eastern site boundary is marginally larger as a result. This is detailed in the updated Architectural Plans prepared by Candalepas Associates and included at **Appendix B**.
- Minor design changes to apartment layouts to increase the areas of the apartment balconies to comply with the *Apartment Design Guide* (ADG). The adaptable unit details are also amended in response to these changes.

Site preparation works

- The extent of tree removal across the site has been revised in accordance with the concurrent proposed changes to the Masterplan. The revised Masterplan has setback development further from Epping Road and has removed the slip road to Epping Road (discussed further below), enabling the retention of an additional 179 trees and a continuous wildlife corridor to be provided from Herring Road to Shrimpton's Creek. As detailed in the revised Arboricultural Impact Assessment prepared by Eco Logical (**Appendix T**), it is proposed to remove 351 trees and retain 442 trees across the site. A further 445 trees are to be removed as part the demolition works that are being completed by LAHC as a public authority, subject to a separate planning process. Whilst all tree removal is sought as part of this application, it is expected that the trees removed on site will be staged in accordance with the delivery of buildings and roads across the Estate.
- The proposed bulk earthworks have been clarified to be consistent with the revised road layout, as discussed below, overall reducing the extent of cut and fill to be completed at Stage 1 of the development. This is detailed in the updated civil plans prepared by ADW Johnson and submitted at **Appendix D**.

Roads and parking

- The deceleration lane from Epping Road has been removed to promote the retention of vegetation along the Epping Road frontage of the site. This is detailed in the updated civil plans prepared by ADW Johnson and submitted at **Appendix D**.



Figure 2 Ivanhoe road layout

Source: ADW Johnson

Landscaping

- Public domain landscaping has been amended to align with the revised road layout and extent as discussed above. Minor amendments have also been made to the extent of works being undertaken to facilitate the connection to Lyonpark Road, with all works occurring in front of the existing crib wall located on the boundary with the adjoining lot at 6-8 Lyonspark Road. This is detailed in the updated Landscaping Plans prepared by Hassell and included at **Appendix C**.
- No changes are proposed to the landscaping treatment for Buildings A1 and C1.

Water cycle management

- No change is proposed to the Stage 1 water cycle management works, as WSUD requirements only need apply to those areas of the Estate that will remain in private ownership and as such the road network did not form part of the initial assessment as these roads are to be dedicated to Council. Accordingly, as no change is required to the water management measures and WSUD for Buildings A1 and C1, ADW Johnson at **Appendix F** confirms that the Stage 1 Stormwater and Drainage Assessment is still valid and does not need to be amended based on the changes to the Masterplan and Stage 1 works.

Utilities and services

- Owing to the refined road network, some changes are required to the site servicing scheme as detailed in the updated Utility Services Report prepared by ADW Johnson and included at **Appendix G**. These changes primarily relate to removing the connections to Epping Road via the deceleration lane that has been eliminated in the amended Masterplan, thereby, removing the need to undertake Stage 1C of the utility and services upgrades. All upgrades will be subject to confirmation from the relevant service provider/authority at the appropriate time.

Subdivision

- Owing to the proposed changes to the Masterplan including the lot layouts and road network, the proposed amalgamating, subdivision and easements and the staging of these works have also been amended as detailed in the revised subdivision plans at **Appendix H**.
- Minor additional changes are also proposed to the stratum subdivision of Buildings A1 and C1 to align with the design changes discussed previously, as well as confirming an easement over the communal open space for Building C1 to ensure it is accessible to the residents of both wings of the building. Refer to the updated plans at **Appendix H**.

Development staging

- The detailed civil and site preparation works proposed as part of the Stage 1 application will continue to be staged. This staging is outlined in the documents at Civil Report and Utilities and Services Report prepared by ADW Johnson, however, this staging may be revised if required to align with timeframes for the dedication of land or the completion of works as outlined in any future Voluntary Planning Agreement entered into with Ryde City Council. Primarily, works will now be completed as Stage 1A and Stage 1B, with Stage 1C comprising the extension to Epping Road no longer forming part of the redevelopment works for the Estate.
- All biodiversity offsets will also no longer be staged and all necessary offsets will be obtained prior to the commencement of the Stage 1 works. The required offsets are detailed in the Biodiversity Assessment and Supplementary Letter prepared by Eco Logical Australia and submitted at **Appendix U**.



Figure 3 The revised staging of roads, earthworks, and servicing

Source: ADW Johnson

3.0 Clarification, additional information and further assessment

The following section should be read in conjunction with **Appendix S** and the relevant appendices of this report, which provide more detailed responses to matters raised by the general public, public agencies and the Department in response to the information and assessment provided in the EIS. The following sections address key aspects of those responses where additional information and/or assessment has been provided in support of that lodged with the EIS, including of the proposed design changes.

3.1 Biodiversity and trees

It is proposed to remove 351 trees in total, with a further 445 trees to be removed as part the demolition works that are being completed by LAHC as a public authority, subject to a separate planning process. 442 trees will also be retained and protected across the site, which represents an increase in the number of trees kept by 211 trees. An updated Arboricultural Impact Assessment has been prepared by Eco Logical and included at **Appendix T** assessing the revised proposed removal and retention of trees across the Estate.

This represents a significantly improved outcome that preserves the continuous corridor of Sydney Turpentine Ironbark Forest (STIF) and Smooth-Barked Apple Turpentine Blackbutt adjacent to the property boundary of Epping Road in order to minimise the impacts to biodiversity. The amendments will result in a significant reduction to biodiversity impacts with a reduction from 0.41 hectares to 0.05 hectares of STIF to be impacted, representing an overall 88% reduction in the area of STIF that was originally proposed to be impacted. Accordingly, 94% of the existing STIF will be retained within the development site.

Table 1 Changes in Number of Trees Removed Onsite

Impact boundary	Trees removed	Trees retained	Total trees
Original Stage 1	856 (includes up to 547 removed during demolition)	350	1,206
Amended Stage 1	796 (including up to 445 removed during demolition)	442	1,238*
Difference	Gain in 211 trees retained onsite		

**within the previous Arboricultural Impact Assessment, trees of the same species, with similar dimensions growing in close proximity to each other, were document as a group. All trees are now counted individually, however the number of trees on the site has not changed.*

An updated Biodiversity Offset Strategy has also been prepared by Eco Logical in accordance with the NSW Biodiversity Offsets Policy for Major Projects and the *Environmental Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy (**Appendix U**). A total of 16 ecosystem credits are required to offset the 1.68 hectares of unavoidable impacts of the project. All ecosystem credits will be acquired and retired prior to the commencement of construction on the site.

3.2 Built form and amenity

Minor design changes are proposed to enhance the overall amenity of Buildings A1 and C1 and to align the detailed design of the Stage 1 works with the amended concurrent Masterplan SSD DA to which this Stage 1 SSD DA is pursuant. The proposed changes are considered to be appropriate and will result in a high-quality design outcome, as:

- Whilst no change is proposed to the extent of Building A1 and C1 and therefore the building setbacks, broader changes to the lot boundaries and surrounding building envelopes under the Masterplan ensure that the proposed Stage 1 buildings are further separated from surrounding development. The proposed setbacks are enhanced and will continue to reduce the scale of buildings as perceived from the public domain.
- Buildings A1 and C1 have been designed to achieve a high level of amenity in accordance with the principles established in the Masterplan, the nine principles of SEPP 65, and the design criteria recommended by the Apartment Design Guide. The proposed design changes improve compliance with the Apartment Design Guide, and notably balcony areas, cross ventilation and building separation. These ensure that all private balconies within Building C1 now achieve the minimum prescribed areas, and that apartments on the northern and western facades of Building A1 are cross-ventilated whilst also adhering to relevant noise constraints.

- Buildings A1 and C1 will continue to achieve the requirements of the Ivanhoe Estate Masterplan Guidelines, and remain consistent with the relevant development standards under the *Ryde Local Environment Plan 2014*. The minor proposed design changes do not require any variation to the FSR or maximum height of buildings.
- The buildings continue to achieve a high standard of façade articulation and finishes, with the building functions clearly defined through the use of materials.

Design excellence

The proposed minor changes to Building A1 and C1 are not considered to impact the overall design quality of the proposed buildings, and as such the advice and feedback issued as part of the previous design review process completed for the proposed buildings and public domain prior to the lodgement of the application remains relevant. The process to retain architectural integrity through to the construction stage identified in the Design Excellence Strategy that accompanied the Stage 1 EIS remains relevant, and will be implemented through the design development phase of the project. This commitment is reflected in the mitigation measures in **Section 5.0** of this report.

Ecologically sustainable development

An Ivanhoe Sustainability Report was prepared by Frasers and submitted as Appendix O of the Stage 1 EIS. The Report identified a range of sustainability strategies that were to be delivered as part of Stage 1, and included an independent assessment by WSP confirming that the design of Buildings A1 and C1 would be capable of achieving the Green Star requirements. The addendum letter at **Appendix O** of this report confirms that the proposed design changes will not impact the ability of the Stage 1 works to achieve the nominated sustainability targets, including a 5 star Green Star rating.

Updated BASIX Certificates are also provided at **Appendix M**.

3.3 Public domain

Stage 1 will continue to deliver the first stage of physical works on the site including sections of the public domain areas and access routes considered under the Masterplan. Planting within the road verges has been designed to shape the types of activities in these areas such as regular street trees along main street consistent with a civic character, and irregular and diverse planting along the collector roads consistent with a neighbourhood character. The planting scheduled developed for the public domain is in accordance with the Ivanhoe Masterplan Design Guidelines.

The proposed development will continue to deliver a high degree of amenity through green landscaped streets, as well as areas for social interaction and passive recreation:

- The proposed treatment to Main Street reflects the role of this road as the main thoroughfare through the site. It incorporates wide, paved areas extending under the colonnade for pedestrian circulation, planter boxes around the edge of the secondary child care play area, on-grade planted squares, and street trees. It also incorporates a series of neighbourhood gardens for amenity and variety, as well as regular street tree planting.
- The intersection of Main Street and Herring Road marks the entry to the Estate. The design of this intersection includes the continuation of large paved areas, and uses mixture of trees, looser in their arrangement to differentiate the site from the public landscape of Macquarie Park.
- The boundary for Building A1 to Herring Road will be treated with multiple layers of landscaping, including street trees, a mix of dense understorey planting, and landscaped terraces to frame the pedestrian pathway and appropriately screen the child care centre's outdoor play area.
- The neighbourhood street that branches off Main Street, will be finished with extensive understorey planting and a variety of street trees, becoming less regular to create a neighbourhood feel rather than an ordered civic promenade. Street furniture will be interspersed to encourage social interaction.
- A series of clearings have also been incorporated into the road network in sunny locations and at principal pedestrian crossing points.

The delivery of high-quality public domain areas across the site as part of the Stage 1 works will also contribute to softening the built form and creating an attractive and amenable ground plane.

3.4 Visual and view impacts

Updated visualisations have been prepared by Virtual Ideas (**Appendix I**, and replicated at **Figure 4** below), providing updated visual assessments of the buildings within the building envelopes for Building A1 and C1 that have been considered and assessed under the updated Visual Impact Assessment (VIA) prepared by Ethos Urban that accompanies the Masterplan.

No significant change is proposed to the detailed design of Buildings A1 and C1, and no change is proposed to these Masterplan building envelopes, and as such the conclusions and outcomes of the Stage 1 assessment remain valid:

- Available views of the proposed buildings on the site will remain primarily of Building A1. The proposed changes to the Stage 1 works do not alter the high-quality design outcome for Building A1, which will also be partly obscured by the adjoining development of 137-143 Herring Road if or when constructed. Building C1 is not readily visible from the surrounding area, and as such it will not dominate or otherwise significantly alter existing views.
- The proposal will not result in the loss of any valuable views or landscape features, and is consistent with the desired future character of the area as identified in NSW Government strategic planning policies. The built form and massing of both A1 and C1 is significantly less than the building envelope massing considered with the masterplan and will therefore not result in any unacceptable visual impacts.
- Consistent with the Masterplan, the proposed buildings will also not adversely impact on private views from residents in surrounding residential apartment buildings, specifically apartments in the upper levels of the Macquarie Park Village development. Whilst some view loss will occur as a result of the proposed development, the view loss is acceptable for the following reasons:
 - The proposed buildings are within the permissible height limit prescribed by the Ryde LEP 2014 and remain consistent with the objectives of the rezoning set out in the Herring Road Finalisation Report.
 - The buildings have been designed to fit comfortably within the building envelopes that were designed and positioned under the Masterplan to promote view sharing and maintain view corridors through the site.
 - The site is within a Priority Precinct, where increased density in close proximity to employment and public transport is appropriate.
 - An alternative design to reduce view loss to private dwellings would compromise the development of the site and result in a development that provides less social and affordable housing on the site.

This assessment should be read in conjunction with the updated VIA accompanying the Masterplan response. It confirms that the proposed development will have an acceptable visual impact and, therefore, no further study or refinement is required and no specific mitigation measure has been nominated in this instance.



View from the corner of Epping and Herring Road



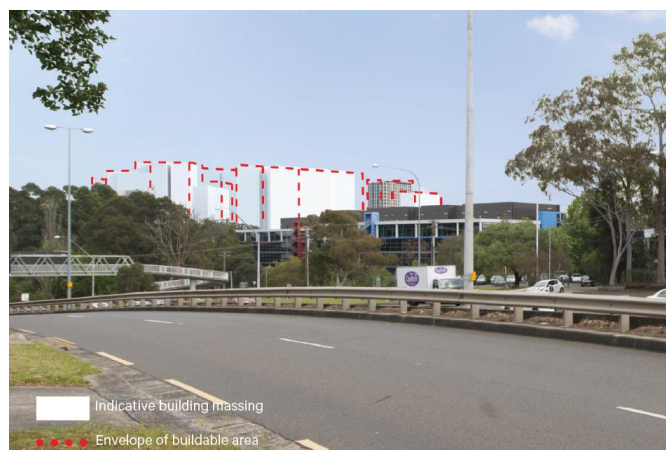
View from Herring Road at Morling College



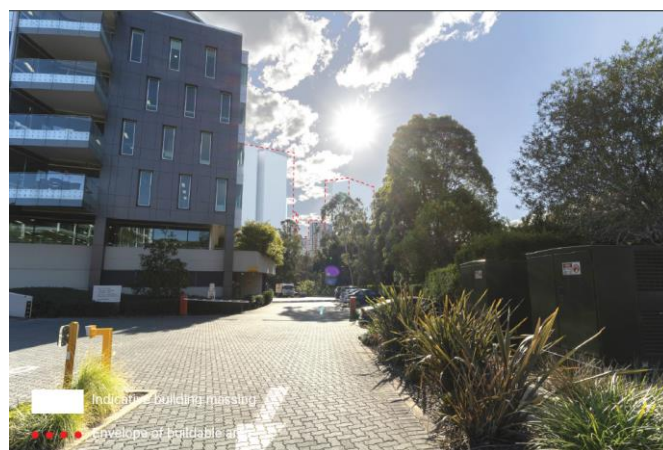
View from Herring Road at Morling College (50mm crop)



Macquarie University Station, Herring Road and Waterloo Road



View from Epping Road north of Lane Cove Road



View from 8-9 Lyonpark Road

Figure 4 Updated visualisations of Building A1 and C1

Source: Virtual Ideas

3.5 Traffic and car parking

Changes are proposed to the road layout under the Masterplan, and as such to the road network proposed to be delivered as part of this Stage 1 application. The changes are detailed in the updated assessment prepared by Ason Group that accompanies the Masterplan, and the updated detailed civil plans provided at **Appendix D** of this report which show the proposed works sought under this application. The amendments are broadly summarised and assessed in the following sections.

Site access

The road network will continue to be delivered in this application, to maximise the amount of public domain being delivered in the first stage of the development, however, it is proposed to remove the deceleration lane from Epping Road under the Masterplan and as such this connection will no longer be delivered as part of the Stage 1 works. The revised roads remain consistent with the Austroads design guidelines and generally consistent with the DCP requirements, with some sections being wider than recommended under the DCP to accommodate improved landscaping and pedestrian / shared pathways. This is confirmed in the updated Civil Engineering Report at **Appendix D**.

Parking, servicing and waste

No change is proposed to the existing provision, design or management of on-site parking, servicing and waste collection associated with Buildings A1 and C1. The buildings remain capable of being appropriately serviced and achieve the minimum parking requirements applying to the proposed social and seniors housing under the SEPPs and with consideration of the maximum parking rates applying to the site under Council's DCP.

Traffic generation

As no change is proposed to the scale or land uses of Buildings A1 and C1, or the parking and loading arrangements for the site, the resultant traffic generated by the proposed development will also remain unchanged.

The impact of this traffic on the surrounding road network was assessed in the Traffic Impact Assessment prepared by Ason Group and submitted as Appendix L of the EIS. This confirmed that the traffic generation associated with the operation of Building A1 and C1 would fit comfortably within the assumed peak traffic thresholds generated in the redevelopment of the Estate, and that these buildings could be comfortably accommodated within the proposed road network.

A revised assessment has been prepared by Ason Group and accompanies the Masterplan addressing the peak traffic thresholds for the Estate in light of the removed deceleration lane from Epping Road. The updated SIDRA modelling confirms that both the Main Street intersections will operate with very good levels of service under the future development scenarios, that the intersection of Epping Road and Herring Road will be subject to increased delays but that the overall intersection LOS would be somewhat similar, and that other nearby intersections would have minimal or no impact due to the removal of the Epping Road access.

The addendum assessment provided at **Appendix E** also confirms that the future upgrade of the existing Herring Road / Ivanhoe Place intersection is not required at this stage to accommodate these Stage 1 buildings. SIDRA modelling confirms that the existing roundabout on Herring Road will continue to operate with a good Level of Service (LOS A) during both the AM and PM peak periods.

Construction traffic

No notable change is proposed to the design and scale of Buildings A1 and C1, however, the extent of civil works to be completed as part of Stage 1, including roadworks and bulk earthworks, have been reduced and as such it is likely that construction traffic associated with the Stage 1 application would also reduce. The assessment completed at Stage 1 confirmed that the peak traffic flows associated with construction vehicles and workers could be accommodated in the surrounding road network.

A significant strategy to minimise and mitigating the potential impacts of construction traffic as nominated by Ason Group in the Transport Assessment at Appendix L of the Stage 1 EIS, is enabling vehicles to access the site between 7am to 7pm Monday to Friday and 8am to 4pm on Saturdays. This aligns with the commencement of the EPA's standard construction hours, but enables vehicles leaving for the day to do so outside of the PM peak traffic period to benefit the operation of the surrounding road network and minimise impacts on residences and businesses. It is emphasised that the nominated hours align with the construction hours nominated in Ryde City Council's DCP.

Sustainable travel

No change is proposed to the Sustainable Travel Strategy developed by Ason Group for the Estate, encouraging the use of public transport, cycling and walking. These measures will ensure the delivery of the Masterplan achieves

the relevant targeted mode shares for people journeying to and from the site. Those intended to be implemented as part of Stage 1 comprise:

- household information packs distributed to each new resident to set out the sustainable travel options in the area;
- a preloaded opal card will be provided to new residents to encourage the uptake of public transport;
- the proponent will explore establishing a bus service between the Estate and Macquarie University Station;
- end of trip facilities will be provided in the basement of Building A1 and C1 and to maximise bicycle usage;
- bicycle initiatives such as 'cycle to work day' will be promoted; and
- workplace travel plans will be encouraged to be provided for new businesses.

3.6 Wind

CPP has prepared an addendum assessment addressing the environmental wind conditions affecting Building A1 and C1 in light of the proposed changes to the Masterplan (see **Appendix J**). The assessment confirms the increased height of buildings for those near Epping Road are expected to slightly improve the wind conditions for Building C1 by providing additional shielding from winds from the west. However, there may also be associated increases in downwash on these building and hence the flow of wind entering the site at ground level. CPP confirm that *"These changes in the masterplan are not expected to significantly affect the wind conditions around building A1. No other substantial changes are expected for the local wind conditions at Stage 1 when considering the surrounding buildings."*

CPP has also provided additional analysis on the ground floor communal open space area for Building C1. It confirms that based on the location of the courtyard, this area will be relatively shielded from most prevailing wind directions owing to its shielding by the northern and southern wings of Building C1 and the townhouses that form the western boundary of the courtyard. The courtyard will be further protected by large surrounding buildings external to the site. CPP confirm that the overall wind conditions would be expected to range from pedestrian sitting and standing criteria, and as such are appropriate for communal activities.

3.7 Site contamination

As addressed in the Stage 1 EIS, the site has been subject to numerous site investigations which identified a location requiring remediation on the site. A Remediation Action Plan was subsequently prepared for the site and reviewed by a Site Auditor. The Remediation Action Plan seeks to remove the contaminated soil from the site and dispose of the material at an appropriate facility off-site, and reinstate the area with clean material if needed as a result of the bulk earthworks occurring on the site.

The site testing and Remediation Action Plan does not pertain to areas in the footprint of the existing buildings, roads and infrastructure within the Estate. These structures are existing at this time, and as such additional testing cannot be completed until after the conclusion of demolition works that are being pursued separately by LAHC. Additional testing, remediation (as required) and certification will be completed as the structures on the site are progressively demolished, with this commitment reflected in the final mitigation measures in **Section 5.0** of this report.

It is emphasised that the site investigations completed to date have found that there is limited evidence of historical contaminating activities on the site, and that contaminants of potential concern were reported at levels less than the relevant assessment criteria, with the exception of benzo(a)pyrene. It is, therefore, considered appropriate that this application be conditioned to complete additional testing at the appropriate time and in line with the staging of development to confirm the continued use of the site for primarily residential uses. The site will be validated by the Site Auditor following the completion of remediation works.

3.8 Utilities and services

AWD Johnson has prepared an updated utilities and services report addressing the revised Stage 1 works, which is provided at **Appendix G** of this report. This assessment identifies the utilities and services to be replaced across the site for proposed and future development and the revised corresponding road layout, and confirms that the provision of utilities and services does not represent a constraint to the delivery of Stage 1. The ultimate design and delivery of infrastructure upgrades and connections will be subject to further consultation and approval from the relevant providers and Authorities at the detailed construction phase of the project.

3.9 Stormwater

ADW Johnson has prepared an addendum stormwater and drainage assessment (**Appendix F**) confirming the validity of the detailed report that accompanied the Stage 1 EIS at Appendix F. It addresses the proposed design changes, including considering the refinement of the Masterplan, and confirms that the findings of the detailed assessment remain valid and do not require further assessment. Accordingly, the proposed development will continue to achieve the requirements of the Ryde DCP and the Masterplan framework including post development flows, rainwater capture and reuse, and water treatment targets.

In response to the comments of the NSW EPA, additional water quality investigations and testing will be completed at the detailed Construction Certificate stage with regard to maintaining the quality of receiving waters at Shrimptons Creek with regard to both the NSW Water Quality Objectives and national water quality guidelines. The investigations and testing will be carried out at regular intervals prior to the commencement of works (to establish a baseline data set, annually thereafter up to completion of the development and annually). This process will ensure that the health of Shrimptons Creek is monitored and if any deterioration is found, it is captured and acted upon. Following this period, Council would be responsible for any further long-term monitoring and improvement works. This process thereby provides certainty to the long-term health of the watercourse.

3.10 Subdivision

The proposed amalgamation and subdivision of lots as detailed in the plans at **Appendix XX** align with the revised vision for the Estate established under the amended Masterplan. The easements included in the subdivision plans demonstrate how the proposed lots can be adequately serviced and accessed and how the lots will not preclude future development on the neighbouring site to the north west of Building A1.

The proposed Stratum Subdivision also aligns with the design and intended operation of Buildings A1 and C1 and will enable the staging, funding and delivery of these buildings to proceed efficiently. It will permit the future occupation and use of the envisaged mixed-use and mixed-tenancy development, as well as equitable access to the communal open space areas for Building C1.

3.11 Air quality

An additional air quality response has been provided by WSP (**Appendix K**). This addendum assessment identifies the potential for air quality impacts resulting from the basement carpark discharge points for Buildings A1 and C1 and confirms that the car park discharge points would be designed in accordance with Australian Standard AS1668.2-2002. WSP confirm that the intermittent and temporary nature of pollutants generated in the car parks ensure the ambient pollution would not exceed the applicable criteria.

Notwithstanding this, ambient air quality monitoring will also be undertaken the childcare centre's outdoor play areas prior to the commencement of childcare centre operations to ensure that the site is not being impacted by vehicle exhaust from the nearby basement car park discharge point, which is confirmed in the updated mitigation measures in **Section 5.0**.

3.12 Noise and vibration

Acoustic Logic has prepared a revised Acoustic Assessment (**Appendix Q**) clarifying issues identified in the submissions. The revised Acoustic Assessment assesses the likely noise and vibration impacts associated with the construction and operation of the proposed development, as well as the potential impacts of noise intrusion from the surrounding road network. The report has been prepared with regard to the revised Masterplan and the Ryde DCP 2014, SEPP Infrastructure, the 'Development Near Rail Corridors and Busy Roads Interim Guideline', the relevant Australian Standards and the EPA's Noise Policy for Industry.

The assessment confirms that consideration has been afforded to the potential noise sources emanating from the operation of the proposed buildings, and nominates potential acoustic treatments and management principles to ensure the proposal achieves the relevant noise emission requirements including:

- Acoustic treatments to be explored at the Construction Certificate stage to mitigate noise emissions from mechanical plant, which would involve consideration of plant selection, standard acoustic treatments such as duct lining, acoustic silencers, and enclosures. Acoustic Logical have further nominated a plant noise emission criteria, which will be addressed at the relevant stage of the development. It is noted that the specifications of the plant required for the proposed buildings cannot be confirmed at this time and are reliant on the detailed design of the proposed building at the construction stage. This commitment is reflected in the mitigation measures at **Section 5.0**.
- All waste collection associated with proposed Buildings A1 and C1 will occur within the building basements, which will effectively minimise noise emissions as confirmed by Acoustic Logic who state that the *"Loading dock and carpark are fully enclosed therefore the noise emissions shall not have any adverse impact to the noise receivers around the project site"*. The detailed design of these waste storage facilities will be designed to achieve the relevant standards. Whilst a restriction on the time periods for deliveries to and from the proposed buildings were not raised as being necessary in the Acoustic Assessment, a condition of consent as recommended by the EPA may be imposed.
- Outdoor play areas for the proposed child care centre will meet the noise emission requirements, assuming they are restricted to a maximum of 40 children outside at any one time over 2-hour time periods, openings from the child care centre are minimised, and a canvas shade cover is installed in the outdoor play area or an equivalent acoustic treatment.

3.13 Geotechnical

The Stage 1 EIS was accompanied by a desktop assessment of the geotechnical conditions of the site. Included at **Appendix L** of this report are detailed site investigations and testing that follow on from the preliminary desktop analysis completed for the site, which includes additional groundwater testing. This additional information provides greater surety on the detailed design and construction of the buildings and public domain on the site, with the recommended strategies in the additional assessments and those nominated by the EPA to be implemented when completing the construction drawings and works on the site.

4.0 Environmental Risk Assessment

The Environmental Risk Assessment (ERA) establishes a residual risk by reviewing the significance of environmental impacts and the ability to manage those impacts. The ERA for Stage 1 of the Ivanhoe Estate redevelopment project was adapted from Australian Standard AS4369.1999 Risk Management and Environmental Risk Tools, and submitted as Chapter 5 of the Stage 1 EIS.

The revised technical assessments and minor design changes discussed in this report have not increased the nominated significance of environmental impacts or the manageability of these environmental impacts. The revised Stage 1 application represents general improvements to the proposed development and potential impacts on the surrounding environment. The final mitigation measures discussed below demonstrate the ability to manage and reduce identified impacts.

5.0 Final mitigation measures

The final list of measures required to mitigate the impacts associated the proposed development are detailed in **Table 2** below. These mitigation measures are based upon those previously identified in the Section 8.0 of the EIS, with revised and additional mitigation measures included to reflect the additional information, clarification or response to submissions contained in this report and the accompanying technical studies. These measures represent the final and full series of mitigation measures proposed for the project pursuant to clause 7(d)(iv) of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.

Table 2 Final Mitigation Measures

Mitigation Measures
<p>Construction Management</p> <ul style="list-style-type: none"> A detailed Construction Traffic Management Plan is to be submitted to the Principal Certifying Authority prior to the commencement of works. Construction traffic, including traffic control, entering and exiting the site, driver protocols and parking is to be managed in accordance with the preparation of a final Construction Traffic Management Plan and the recommendations of the Traffic Impact Assessment prepared by Ason Group (February 2019) and the addendum statement (12 August 2019) where relevant. A Biodiversity Management Plan and Construction Environment Management Plan is to be submitted to the Principal Certifying Authority prior to the commencement of works on site, detailing (among other things): <ul style="list-style-type: none"> the delineation of clearing boundaries and minimising harm to fauna; mechanisms to minimise other environmental impacts such as sediment control, dust, noise, lighting and the protection of waterways (with reference to other mitigation measures below); pre-clearing surveys and clearance supervision; re-planting and vegetation management; and weeding and ongoing measures. <p>These plans are to have reference to the recommendations of the Biodiversity Assessment Report and Offset Strategy prepared by Eco Logical Australia (September 2019) where relevant.</p> <ul style="list-style-type: none"> Noise and vibration is to be managed in accordance with the recommendations of the Acoustic Assessment prepared by Acoustic Logic (November 2017) and the detailed Construction Environment Management Plan to be prepared by a suitably qualified person. The Management Plan is to detail any intra-day respite periods for highly intrusive activities where required. A Construction Air Quality Management Plan should be prepared separately or form part of the Construction Environment Management Plan, with reference to the recommendations of the Air Quality Impact Assessment prepared by WSP (October 2018), prior to the commencement of works. The proponent is to provide a Waste Policy Design Compliance Certificate for the Construction Certificate application, which is to include details regarding disposal and recycling of different materials expected from construction, and the transport and destinations of these materials. Erosion and sediment control is to be managed in accordance with the Erosion and Sediment Control Plans prepared by ADW Johnson (August 2018), or as amended by a suitably qualified person.
<p>Access and Parking</p> <ul style="list-style-type: none"> The detailed design of the road network should be generally consistent with the Civil Engineering Plans and Report prepared by ADW Johnson (September 2019). Any intersection upgrade works will be designed and completed in consultation with the relevant road authority. Where practicable, implement the recommendations of the Green Travel Plan prepared by Ason Group (February 2019) and encourage the preparation of workplace travel plans for new businesses. Goods delivery and waste collection services are not to occur outside of 7am to 6pm, Monday to Friday.
<p>Child Care Centre</p> <ul style="list-style-type: none"> The detailed design and operation of the centre must demonstrate consistency with Part 2, Part 3 and Part 4 of the Child Care Guideline and the National Quality Framework Assessment Checklist. The future design and operation of the child care centre will have consideration to the recommendations of the Acoustic Assessment prepared by Acoustic Logic (October 2019).
<p>Flora and Fauna</p> <ul style="list-style-type: none"> Prepare a Biodiversity Management Plan and Construction Environment Management Plan prior to construction. Acquire and retire biodiversity offsets in accordance with the Biodiversity Assessment prepared by Eco Logical Australia (September 2019). Provide nest boxes to replace hollow bearing trees.
<p>Social Impacts</p>

Mitigation Measures

- Where practicable, implement the recommendations and mitigation measures to minimise social impacts and increase social cohesion outlined in the Social Impact Assessment prepared by Elton Consulting at Appendix W of the Masterplan.

Safety

- Where practicable, implement the recommendations of the Crime Prevention Through Environmental Design Report prepared by Ethos Urban (February 2019).
- As part of a plan of management of the future childcare centre operator that there is CCTV coverage of the childcare centre basement parking area and the corridor leading to the basement entrance to the childcare centre to ensure this area has sufficient surveillance and the perception of safety. A security consultant with a Class 2A licence (in accordance with the Security Industry Act 1997) should provide specific advice on the placement, monitoring and maintenance of the CCTV network for the future childcare centre operator.

Waste

- Waste management is to be carried out in accordance with the details and recommendations of the Waste Management Plan prepared by Elephants Foot (October 2018).

Utilities and Services

- Utilities and services shall be extended and augmented in accordance with Authority requirements and specifications and with reference to the Utility Services Report prepared by ADW Johnson (September 2019) and are subject to appropriate negotiations being undertaken with other affected property owners.

Sustainability

- The development will incorporate ecological sustainable development principles and will be designed generally in accordance with the objectives, targets and strategies of the Ivanhoe Sustainability Report prepared by Frasers Property Australia (August 2018).

Water Sensitive Urban Design

- Provide a new piped stormwater system through the basement of Building A1 and connected to the public drainage network to cater for emergency overland flows and 1 in 100 year ARI storm events, enabling Lot 1 in DP 609711 to continue to drain through the site. Final details of the proposed system will be provided prior to the issuance of the relevant Construction Certificate.
- All water quality devices will be provided within the lots to treat runoff prior to it discharging to the public drainage network as recommended in the Stormwater and Drainage Assessment prepared by ADW Johnson (October 2018).
- Ensure the drainage pipework can provide for an end of line rain garden(s) to meet the requirements of the Green Star communities' guidelines, being delivered in a subsequent and future stage of the development.
- Provide rainwater tanks, OSD tanks, and surface drainage pits within the lot to capture and attenuate flows before discharging to the public system, in accordance with the recommendations of the Stormwater and Drainage Assessment prepared by ADW Johnson (October 2018).

Archaeology

- In the event that unexpected historical archaeological objects or deposits are uncovered, works should cease and a qualified Archaeologist contacted to assess the significance of the material and recommend whether further investigation is required.
- If the finds are found to be Aboriginal objects, the Office of Environment and Heritage must be notified under section 89A of the National Parks and Wildlife Act 1974.
- Appropriate management and avoidance or approval under a Section 90 Aboriginal Heritage Impact Permit should then be sought if Aboriginal objects are to be moved or harmed.

Remediation

- Additional investigations will be completed within the footprint of the demolished buildings and infrastructure when the separate demolition process being undertaken by LAHC has been completed at each stage. The Remedial Action Plan is to be updated progressively, as required following testing, to the satisfaction of the Auditor and prior to issuing the relevant Construction Certificate to commence works in that component of the site.
- The additional testing will be referenced in the Works Plan and a Validation Sampling and Analysis Quality Plan (VSAQP) to be made available to the Auditor prior to remediation in that component of the site commencing, as required.
- The Remediation Action Plan submitted at Appendix W of the EIS contains an unexpected finds protocol, which will be updated following the completion of additional testing where required to explicitly address these post-demolition investigations. This will include, or be accompanied by, an asbestos management plan (AMP) to the satisfaction of the Auditor and prior to issuing the relevant Construction Certificate for works to commence in that portion of the site.
- A Section A Site Auditor Statement and Site Auditor Report will be prepared at the completion of remediation works, confirming that the site has been made suitable for its intended use.

Mitigation Measures

Design Excellence

- In accordance with the Design Excellence Strategy prepared by Ethos Urban (February 2018), the Design Team will be expected to:
 - retain lead roles over the relevant design decisions in the preparation of the design drawings for a construction certificate for the preferred design;
 - retain lead roles over design decisions in the preparation of the design drawings for the contract documentation; and
 - maintain continuity during the construction phases to the completion of the project.

Air Quality

- If required, incorporate measures such as appropriate ventilation systems, vegetative and physical screens in accordance with the recommendations of the Air Quality Assessment prepared by WSP (October 2018) and the Addendum Statement (September 2019).
- All carpark discharge points are to be designed to comply with the relevant Australian Standards. Ambient air quality monitoring is to be undertaken in the childcare centre's outdoor play areas prior to the commencement of childcare centre operations.

Noise and Vibration

- Attenuate windows, doors, external roofs, ceilings, and walls in accordance with the recommendations of the Acoustic Assessment prepared by Acoustic Logic (October 2019).
- Plant will be designed in accordance with the recommendations of the Acoustic Assessment prepared by Acoustic Logic (October 2019), and assessed via a detailed mechanical noise assessment to be detailed prior to the issuance of the relevant Construction Certificate.

Flooding

- Ensure all floor levels and entrances to basement car parks are located above the PMF event flood levels.

Geotechnical

- The recommended strategies for development under the Geotechnical Assessment prepared by Douglas Partners (December 2017), will be implemented when completing the construction drawings and works on the site.

Retail/Community

- Any commercial kitchen be fitted with appropriate commercial exhaust ventilation systems that filter and treat discharges in accordance with the relevant Australian Standards.
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6.0 Conclusion

The Applicant has reviewed each of the submissions made by members of the general public, community organisations, and State Government agencies. In response to issues raised in these submissions, as well as matters identified by the Department, the Applicant has undertaken further environmental assessment and provided clarification regarding the scope of the proposed development that is the subject of this planning application.

The revised scheme adopts greater building separation, improves residential amenity, and will continue to achieve a high-quality design outcome that is commensurate with the desired future character of the site and area. The SSD DA, as supplemented by this Response to Submissions and Amended Proposal, addresses each of the matters identified by the Secretary's Environmental Assessment Requirements and those matters identified in the *Environmental Planning and Assessment Regulation 2000*. The environmental assessment concludes that, subject to the implementation of final mitigation measures outlined in **Section 5.0** of this report, the proposed development would not result in any unacceptable impacts.

Having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development, the carrying out of the project is justified for the following reasons:

- The proposed development is consistent with the vision and framework established under the revised Masterplan, to which this application is pursuant.
- The detailed design of Buildings A1 and C1 are consistent with the site-specific Ivanhoe Estate Design Guidelines, and have been reviewed by and amended in accordance with the advice of independent experts within the Design Review Panel that are charged with ensuring design excellence is achieved on the site.
- The proposal will deliver 259 purpose-designed social housing units, including dual key and independent living units, to replace the existing housing stock with new, high-quality homes. Dwellings of all tenures will achieve an acceptable level of residential amenity.
- The provision of complementary non-residential tenancies will cater to the new community being established on site, and encourage site activity.
- The buildings achieve a high level of architectural design, are varied in design and contribute to visual interest on the site, and will benefit the developing skyline of Macquarie Park.
- The proportion of public domain areas being delivered in this initial stage have been maximised to benefit the establishment of mature vegetation in the streetscape and around building edges, and provide the new community with places to congregate and socialise.
- Examples of best practice sustainable building principles will be delivered as part of Stage 1 to achieve the commitments under the Masterplan, and Building A1 and C1 have been certified as being capable of achieving the nominated targets.
- The proposal demonstrates that it fits within the capacity of the existing road network, and other utilities and public infrastructure are readily available and can be augmented to meet the needs of the additional business activities and population arising from the increased density.
- The proposal will deliver a portion of the public benefits considered under the Masterplan that are intricately linked with the development (such as an enhanced public domain, road network etc).
- The project has been informed by extensive pre-lodgement community consultation occurring at this stage and for the concurrent Masterplan, with feedback from this consultation shaping the end outcome.
- There are no adverse environmental impacts that cannot be appropriately managed by the mitigation measures set out in this EIS and the accompanying reports.

Given the planning merits described above, and the significant public benefits associated with the proposed development, it is recommended that this application be approved.