

Final Mitigation Measures

Sydney Football Stadium Redevelopment – SSD 9249

The following sections set out the final list of measures required to mitigate the impacts associated with the Concept Proposal and with the Stage 1 Demolition works. These mitigation measures are based upon those previously identified in Section 5.0 of the Response to Submissions (RTS). Following the provision of further information and clarification in response to matters identified by the EPA, minor amendments to Mitigation Measure S1-NV2 have been made from the RTS. New text in this mitigation measure is shown in ***bold italics***, whilst text proposed to be deleted is shown in ~~**bold strikethrough**~~. 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*.

Mitigation Measures – Concept Proposal

	Mitigation Measure
CP-BF	Built Form and Urban Design
CP-BF1	The Final Urban Design Guidelines prepared by SJB Urban Design (August 2018) are to be adopted for the project and inform the Design Excellence Process and Stage 2 Development Application.
CP-BF2	Detailed design of the stadium should occur in accordance with the processes outlined in the Design Excellence Strategy (2018) prepared by Infrastructure NSW and endorsed by the NSW Government Architect.
CP-BF3	The detailed design of the new stadium should have regard to the recommendations of the Visual Impact Assessment prepared by Ethos Urban (June 2018).
CP-BF4	A Visual and View Impact Assessment is to be prepared to reflect the detailed design and submitted with the Stage 2 Development Application.
CP-BF5	Shadow diagrams are to be included in the Stage 2 Development Application showing the actual shadow impacts of the detailed stadium in comparison to the maximum building envelope.
CP-BF6	Any ground level retail premise uses within the stadium are to be detailed in the Stage 2 Development Application and subject to separate approval for use.
CP-BF7	Public domain design is to be coordinated with the design for the Moore Park Road separated cycleway.
CP-TA	Transport and Accessibility
CP-TA1	The Traffic and Transport Assessment (Arup 2018) is to be revised and resubmitted with the Stage 2 Development Application, outlining any changes to the traffic and transport management approach. The revised report is to detail any further information regarding integrated ticketing as a result of the Applicant's commitment to develop a plan with Transport for NSW. Details of the final parking provision within the reinstated MP1 car park are also to be included.
CP-TA2	The Stage 2 Development Application should include details of a preliminary signage and wayfinding strategy that has been prepared in consultation with the City of Sydney, Transport for NSW and the Centennial and Moore Park Trust.
CP-TA3	Details of operational vehicular servicing and loading activities are to be included in the Stage 2 Development Application.
CP-TA4	A Transport Access Guide is to be prepared prior to the commencement of operations for the new stadium to provide enhance information to visitors and patrons of the new stadium in relation to the range of travel modes and facilities provided at the stadium, with an emphasis on encouraging non-car travel modes.
CP-TA5	The Applicant is to consult with the Sydney Coordination Office during the preparation of the Construction Management Plan and Transport Assessment for the Stage 2 Development Application so as to manage and mitigate potential cumulative impacts associated with other development and infrastructure projects.
CP-TA6	The Applicant is to work with the Centennial Parklands and Moore Park Trust to facilitate improved pedestrian connectivity between the new stadium, the Tibby Cotter Bridge and the Sydney Light Rail stop prior to the completion of the new stadium.

	Mitigation Measure
CP-HER	Heritage
CP-HER1	A supplementary Heritage Impact Statement is to be submitted with the Stage 2 Development Application which assesses the detailed stadium design in relation to the potential for unforeseen impacts on those heritage items and heritage conservation areas assessed in the Heritage Impact Statement (Curio 2018) submitted with the current Development Application.
CP-HER2	Further investigative works should be undertaken to better determine the location of Busby's Bore in accordance with the processes outlined in the Methodology Statement - Working Near Busby's Bore (August 2018). An archaeological research design and excavation methodology should be prepared by a suitably qualified Excavation Director for review by the Heritage Council of NSW or its delegate for any works which will impact archaeological information or Busby's Bore.
CP-HER3	The design of the stadium, including any proposed excavation for basement and/or services infrastructure, is to avoid any physical impacts on Busby's Bore.
CP-HER4	A Heritage Interpretation Strategy is to be prepared by a qualified person(s) for submission with the Stage 2 Development Application.
CP-HER5	An Aboriginal Cultural Heritage Assessment Report is to be prepared in consultation with local Aboriginal stakeholders and be submitted with the Stage 2 Development Application.
CP-HER6	A Methodology Statement for the protection of Busby's Bore is to be submitted with the relevant future Development Application for excavation and construction of the new stadium.
CP-NV	Noise and Vibration
CP-NV1	A Noise and Vibration Assessment is to be prepared and submitted with the Stage 2 Development Application to assess the potential construction and operation noise and vibration impacts of the new stadium, having regard to the noise assessment framework and criteria outlined in the Noise and Vibration Assessment (Arup 2018) that accompanies this application.
CP-NV2	The Stage 2 Development Application is to identify a framework and methodology for the ongoing monitoring of noise from the stadium.
CP-NV3	The number of concerts at the stadium is not to exceed six (6) per calendar year.
CP-BD	Biodiversity
CP-BD1	An updated Arboricultural Impact Assessment is to be submitted with the Stage 2 Development Application confirming that the detailed design of the stadium, public realm and new landscaping is compatible with the retention of those trees identified in the Arboricultural Impact Assessment (TreeIQ 2018) that accompanies this application as being for retention.
CP-BD2	The Public Domain and Landscape Plan is to identify new tree planting and consider the implementation of the recommendations of the Biodiversity Development Assessment Report (Jacobs 2018) and Final Urban Design Guidelines (SJB 2018).
CP-BD3	Tree replanting is to be detailed in the Stage 2 Development Application at a minimum replanting ratio of 1.5 trees for every one tree removed with a variety of pot sizes.
CP-SF	Stormwater and Flooding
CP-SF1	A detailed Stormwater and Flooding Assessment is to be prepared and submitted with the Stage 2 Development Application taking into account the detailed design to the stadium and public domain, and outlining measures for rainwater capture and reuse within the site, piped and overland flow, on-site stormwater detention, water sensitive urban design, and include modelling of water quality and quantity for discharges from the site. Details of impacts upon local stormwater infrastructure and local flood conditions is to be included in the assessment.
CP-SF2	The Stage 2 Development Application is to contain details of water quality assessment and modelling undertaken to demonstrate that pollutant reduction targets are achieved.
CP-SF3	Targets for rainwater capture and re-use identified in the ESD Strategy prepared by Aurecon (May 2018) are to be adopted for the detailed design and identified in the Stage 2 Development Application.
CP-CG	Contamination and Geotechnical
CP-CG1	A Detailed Site Contamination Investigation (Phase 2) is to be prepared submitted with the Stage 2 Development Application, detailing identified and potential contamination. If recommended by the Phase 2 assessment, a Remedial Action Plan (RAP) must also be prepared and submitted with the Stage 2 Development Application.

	Mitigation Measure
CP-CG2	A Geotechnical Statement is to be prepared and submitted with the Stage 2 Development Application assessing the potential impacts of piling, excavation and construction on existing buildings and structures within the immediate vicinity of the site.
CP-UI	Utilities and Infrastructure
CP-UI1	An Infrastructure Servicing Strategy is to be prepared and submitted with the Stage 2 Development Application. Preparation of the strategy is to include consultation with all relevant utility authorities, including but not limited to those in respect of potable water, stormwater, sewage, electricity, gas, telecommunications
CP-WM	Waste Management
CP-WM1	The Construction Management Plan accompanying the Stage 2 Development Application should outline measures to avoid, minimise, reuse and recycle waste generated during the construction of the new stadium.
CP-WM2	An Operational Waste Management Plan is to be prepared and be submitted with the Stage 2 Development Application.
CP-WI	Wind Impacts
CP-WI1	A Pedestrian Wind Environment Study, including wind tunnel testing, is to be prepared based upon detailed stadium design and submitted with Stage 2 Development Application.
CP-WI2	The Noise and Vibration Assessment submitted with the Stage 2 Development Application is to include an assessment of the potential for the detailed stadium design to generate wind noise and any consequent impacts upon nearby sensitive noise receivers.
CP-CM	Construction Management
CP-CM1	A Construction Management Plan is to be prepared and submitted with the Stage 2 Development Application outlining the practices and strategies to be implemented during the construction phase in order to avoid, reduce and mitigate the environmental impacts of construction activities.
CP-SE	Communications, Community and Stakeholder Engagement
CP-SE1	Further community consultation is to be undertaken in relation to the detailed design, construction and operation of the new stadium prior to the lodgement of the Stage 2 Development Application and outlined in a Consultation Outcomes Report.
CP-SE2	The Stage 2 Development Application is to outline measures to provide for ongoing community consultation and engagement following the commencement of operations for the new stadium.
CP-SE3	The Applicant will liaise with the Centennial and Moore Park Trust, City of Sydney Council and Transport for NSW to promote awareness of and integration of the new Sydney Football Stadium with surrounding areas and key projects.
CP-SE4	The Applicant is to establish a working group with Centennial Park and Moore Park Trust to advance the design and delivery of: <ul style="list-style-type: none"> • connections to the light rail • connections to Tibby Cotter Bridge • security infrastructure for Driver Avenue • public realm treatment of the northern portion of Driver Avenue adjacent to the redeveloped SFS entry • cycle infrastructure within the precinct • security solutions
CP-SE5	The Applicant will participate in the Moore Park Working Group to ensure that the detailed design subject to the Stage 2 Development Application gives consideration to integration with the actions of other Working Group members.
CP-SEC	Safety and Security
CP-SEC1	A Crime Prevention Through Environmental Assessment Report is to be prepared by a qualified crime risk assessor based upon the detailed stadium, public domain and landscaping design and is to be submitted with the Stage 2 Development Application.
CP-SEC2	Security of the stadium during event and non-event periods is to be considered during the detailed design of the stadium in accordance with the Security Principles Report prepared by Intelligent Risks (May 2018).
CP-SEC3	The Applicant is to liaise with Transport for NSW and NSW Police and Counter Terrorism and an outline of security measures is to be included in the Stage 2 Development Application.
CP-GW	Groundwater

	Mitigation Measure
CP-GW1	An updated Groundwater Assessment Report is to be prepared and submitted with the Stage 2 Development Application. A Groundwater Management Plan is to be prepared prior to the commencement of construction works pursuant to any future Stage 2 Development Application.
CP-ESD	ESD
CP-ESD1	Detailed design of the new stadium is to target a minimum of a LEED Gold rating, or an equivalent rating under another recognised standard such as Green Star.
CP-ESD2	Prepare a Green Travel Plan for the stadium, highlighting public transport and active transport options for staff and visitors to the new stadium.

Mitigation Measures – Stage 1 Demolition

	Mitigation Measures
S1-CM	Construction Management
S1-CM1	<p>A detailed Demolition and Environmental Management Plan (DEMP) is to be prepared by the appointed contractor prior to the commencement of works in accordance with the principles set out in, and addressing all issues covered by, the Construction Management Plan prepared by Aver Consulting (June 2018) and addressing the Environmental Performance Objectives contained in Section 4.6 of the Response to Submissions Report by Ethos Urban, and the following:</p> <ul style="list-style-type: none"> • Site notice(s); • Hours of work; • 24 hour contact details of the site manager; • Protection of Busby's Bore in accordance with the Methodology Statement - Working Near Busby's Bore (August 2018); • Construction traffic and pedestrian management plan, generally in accordance with the Transport Impact Assessment prepared by Arup (June 2018); • Demolition noise and vibration management plan, generally in accordance with the Noise and Vibration Impact Assessment and Addendum Noise and Vibration Impact Assessment prepared by Arup (June 2018, August 2018); • Management of dust and odour to protect the amenity of the neighbourhood, generally in accordance with the Air Quality Impact Assessment prepared by Wilkinson Murray (August 2018); • Erosion and sediment control, generally in accordance with the plans by Arup (August 2018); • Measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site; • Stormwater control and discharge; • Site layout and management, generally in accordance with the Site Layout Plan prepared by Cox Architecture (August 2018); • Waste storage and recycling control; • Construction material storage; • Litter control; • Protocols for the management of incidents and emergencies within the site, including environmental incidents, including Trigger, Action and Response criteria and processes for each potential impact; • Unexpected finds protocol; • Protection of existing underground petroleum storage tanks; • Management of events within and around the precinct (including but not limited to Mardi Gras and the Sydney Running Festival) • Site security, monitoring and surveillance; • Access to fire booster facilities off Moore Park Road and Paddington Lane or, should access not be achievable, consultation with Fire and Rescue NSW at least two (2) days prior to access being restricted; and • External lighting.

	Mitigation Measures
S1-CM2	<p>The Demolition and Environmental Management Plan is to include detailed measures to ensure that the 90% of demolition waste by weight will be diverted from landfill. The contractor is to ensure:</p> <ul style="list-style-type: none"> materials for re-use or recycling are stockpiled to avoid cross contamination by general and other waste such as hazardous materials and contaminated soil, the movement materials from stockpiles of waste materials for disposal and of materials for reuse or recycling is recorded, waste materials stockpiled for disposal and materials stockpiled for re-use or recycling are managed to ensure waste streams reach their intended final destinations, being premises legally able to accept those wastes and materials for re-use or recycling, only concrete proposed to be reused on site is to be crushed on site, arrangements for the disposal of waste from the premises is organised with the waste facility legally able to accept that waste rather than through a third party.
S1-CM3	<p>All waste vehicles accessing and egressing the site to be monitored as follows:</p> <ul style="list-style-type: none"> The Contractor will maintain a waste and transport log book which will record the licence plate and waste types of all vehicles accessing and egressing the site. The Contractor will be required to provide waste disposal receipts matching the time, date, licence plate and the type of waste being disposed. All waste dockets which confirm the receipt and weight of waste for disposal and/or recycling at a licenced facility must be retained by the Contractor and be provided to the Principal.
S1-CM4	<p>Waste monitoring</p> <ul style="list-style-type: none"> A database inventory would be used to record and report all waste streams, volumes and management measures for all waste streams arising through the demolition works. This database would be used to inform internal and external stakeholders on the type, volume and rate of waste being generated, re-used and recycled. A licenced waste management contractor would be used to remove waste from the Site for reuse, recycling or disposal. The Contractor will be experienced in removing and transporting waste from the Site and will dispose of the waste at an appropriate licenced facility.
S1-CM5	<p>Demolition and Environmental Management Plan is to address the requirements of the NSW Police submission, being:</p> <ul style="list-style-type: none"> The Notification of any road closures during demolition and construction work. Adequate lighting of the work site at night. The work site to be secured at night or during periods of inactivity. Security patrols of the work site by contracted licensed security guards. All engineers, workers, visitors, security guards, etc be vetted and to follow instructions and warnings as stipulated in a formal induction process. Police be offered a familiarisation tour of the work site prior to the commencement of works. Notification of any suspicious activity or objects in or around the work site during demolition and construction work.
S1-CM6	A list of key contacts on the work site provided to NSW Police prior to the commencement of works.
S1-CM7	<p>The following measures are to be included in the DEMP in order to avoid potential groundwater impacts:</p> <p>All fuels and chemicals are to be stored in a secure, impervious bunded area at least 50 m from drainage receptors in the construction compound and in accordance with relevant Material Safety Data Sheets</p> <p>A Spill Response Procedure should be established for the project</p>
S1-NV	Noise and Vibration
S1-NV1	<p>All work on site will only occur between the following hours:</p> <ul style="list-style-type: none"> 7am and 6pm Monday to Friday; 8am and 1pm Saturday; No works on Sundays or public holidays; or unless otherwise approved in writing by the NSW Department of Planning and Environment due to extenuating circumstances (e.g. deliveries of over-sized plant and equipment).
S1-NV2	<p>The Demolition and Environmental Management Plan is to include a detailed Construction Noise and Vibration Management Plan to ensure that potential noise and vibration activities are managed in accordance with the Noise and Vibration Impact Assessment (Arup 2018). The DEMP is to implement all mitigation measures and comply with all recommendations of the Noise and Vibration Assessment Report (Arup 2018) that relate to the Stage 1 Demolition works, including:</p> <ul style="list-style-type: none"> A noise management and vibration plan shall be prepared. This will specify the actual plant to be used and will include updated estimates of the likely levels of noise and the scheduling of activities.

	Mitigation Measures
	<ul style="list-style-type: none"> A member of the site staff will act as the Responsible Person with respect to noise and vibration. The Responsible Person is to: <ul style="list-style-type: none"> Regularly train workers and contractors (such as at toolbox talks) to use equipment in ways to minimise noise; Ensuring good work practices are adopted to avoid issues such as noise from dropped items, noise from communication radios is kept as low as is practicable; Ensure the use of radios or stereos outdoors is avoided; and Ensure shouting, talking loudly and slamming vehicle doors is avoided. Some construction activities proposed for use as part of the early works are may generate noise that is identified as being potentially 'annoying' or intrusive to residents as defined in Section 4.5 of the ICNG. Such intrusive noise may result from these activities include the use of chainsaws, mulchers, excavators and the concrete crusher, which are also identified as the noisiest equipment in Table 15 of the Noise and Vibration Impact Assessment (Arup, June 2018). Stationary equipment that may cause intrusive noise intrusive stationary equipment, such as the mulcher and concrete crusher, should be located to the south of the site as far from receivers as possible. Where possible stationary equipment should be located behind structures such as demountable buildings or stockpiles to maximise shielding to receivers. Intrusive activities should be Where works have the potential to result in intrusive noise, these works should be: <ul style="list-style-type: none"> undertaken after 8am. only be undertaken over continuous periods not exceeding 3 hours with at least a 1-hour respite period in between. not undertaken during designated 'rest' times for Kira Child Care Centre at 230 Moore Park Road, Paddington at times to be agreed with centre management. All vehicles, plant and equipment should be turned off when not in use. The Responsible Person is to ensure that the condition of the powered equipment used on site is checked daily to ensure plant is properly maintained and that noise is kept as low as practicable. The Responsible Person should keep the local community advised on expected activities and coordinates scheduling and locations of noisy works around any critical user events where practicable. This shall include face to face meetings with nearby receivers if requested and a letter box drop, and shall include close liaison with neighbours during construction, including Fox Studios, NRL and Rugby Australia. Appropriate records are to be maintained of complaints to include timing, reported issues, actions taken and measures to be included for on-going works. The complaints log will need to be filed with the Responsible Person. Consultation with stakeholders of surrounding receiver buildings, including the UTS, Rugby Australia, the NRL and Fox Studios, should be sought when developing a construction schedule, with particular focus on noise sensitive periods such as exam periods for UTS Consider using electric / hydraulic equipment where possible, such as hydraulic pulverisers for demolition Use 'quacker' style reversing alarms in lieu of tonal beeping alarms Locate loud, stationary plant as far from noise sensitive receivers as possible. The ideal location is identified as the western most corner of the site compound along Driver Avenue, as shown in the Site Layout Plan by Cox Architecture (August 2018) Erect hoarding around the stationary plant where feasible, including the concrete crusher and mulcher when in use. Hoarding shall be erected such that the line of sight between the equipment and the nearest sensitive receivers is broken, cognisant of access requirements. An enclosure shall be installed around the concrete crusher. The enclosure shall be made of material with an appropriate density and lined internally in accordance with AS 2436-2010.
S1-NV3	The arrival of deliveries to site and the idling of trucks on public roads shall not be permitted outside of standard hours of construction.
S1-TA	Transport and Accessibility
S1-TA1	A detailed Construction (Demolition) Traffic, Transport and Pedestrian Management Plan is to be prepared prior to the commencement of works which includes details of routes for heavy vehicle demolition traffic to avoid the use of local roads, instructions to be provided to staff and visitors in order to minimise on-street parking in local residential areas, pedestrian egress and protection in association with the ongoing use of the Sydney Cricket Ground, and the protection of pedestrians and cyclists along Moore Park Road and Driver Avenue.
S1-TA2	<p>A detailed Construction (Demolition) Traffic, Transport and Pedestrian Management is to include the following commitments:</p> <ul style="list-style-type: none"> All trucks will be loaded to their prescribed weight limits, within the site boundary and be covered with a tarp (rubbish loads only) prior to exiting the Site. All trucks are to be held within the construction site for the demolition works, with no queueing on public roads to occur. Construction workers / tradespersons will be encouraged to utilise public transport and/or car pool with other construction workers.

	Mitigation Measures
	<ul style="list-style-type: none"> All demolition vehicles are to be contained wholly within the site and vehicles must enter the site before stopping. A construction zone will not be permitted on surrounding public roads. All materials would be delivered and spoil removed during standard construction hours Establishment and enforcement of appropriate on-site vehicle speed limits (20km/h), which would be reviewed depending on weather conditions or safety requirements; Neighbouring properties would be notified of construction Works and timing; No vehicles will queue on public roadways including Moore Park Road Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at site at any one time. Vehicles would arrive to the site in a staged manner during the standard construction hours that will prevent the need for queuing outside the site
S1-TA3	The Applicant is to ensure regular consultation between the demolition contractor and the Sydney Coordination Office so as to manage and mitigate potential cumulative impacts associated with other development and infrastructure projects.
S1-TA4	Parking is to be provided within the site for all staff and contractors for the duration of the Stage 1 demolition phase.
S1-HER	Heritage
S1-HER1	A qualified heritage specialist is to be appointed to provide advice regarding any special protection measures which are to be implemented during the demolition phase to avoid impacts to Busby's Bore. If necessary, an appropriately qualified heritage advisor should supervise sensitive demolition activities in close proximity to the known locations of the Busby Bore shafts within the site.
S1-HER2	The Demolition and Environmental Management Plan is to include details of site protection fencing/hoarding and any exclusions zones established in consultation with a qualified heritage consultant that are required to ensure that demolition equipment, plant and activities do not give rise to any physical impacts on the SCG Members and Ladies Stands.
S1-HER3	The Methodology Statement - Working Near Busby's Bore (August 2018) is to be adhered to for the duration of demolition phase. The contractor is to maintain a record of any vibration criteria exceedances at Busby's Bore for inspection upon request by the NSW Department of Planning and Environment, Sydney Water or the NSW Heritage Council.
S1-HER	Archival recording of the existing stadium is to be undertaken prior to the commencement of demolition activities to provide a record of the architectural, engineering and cultural aspects of the existing Sydney Football Stadium.
S1-BD	Biodiversity
S1-BD1	Tree retention and protection is to occur in accordance with the Arboricultural Impact Assessment prepared by TreelQ (May 2018).
S1-SF	Stormwater and Flooding
S1-SF1	The measures outlined in the Erosion and Sediment Control Plan (Arup, August 2018) are to be implemented during the Stage 1 Demolition phase.
S1-SE	Communications, Community and Stakeholder Engagement
S1-SE1	The Applicant is to provide regular updates via the project website and other means in order to inform the local community of key events during the demolition phase, including
S1-SE2	A dedicated phone number and email address is to be established and communicated to local residents and businesses as a point of information and contact throughout the demolition process. These contact details are to be displayed clearly at the site and made available via other communications channels including the project website.
CP-CG	Contamination and Geotechnical
S1-CG1	A Hazardous Materials Survey is to be undertaken for the existing stadium and ancillary structures prior to the commencement of demolition works. Any hazardous material identified are to be removed in accordance with the relevant legislation by an appropriately qualified contractor, and disposed of at an appropriate licensed waste facility.

	Mitigation Measures
S1-SEC	Safety and Security
S1-SEC1	The contractor is to make arrangements for regular security patrols and installation of site security monitoring equipment from the commencement of site establishment works in order to discourage crime and unauthorised site access.