## Summary of Mitigation Measures

Aspect	Mitigation measure	Timing
Traffic, Access and Parking	The following mitigation measures would be implemented to manage impacts relating to traffic, access and parking:	Prior to Commencement of Works / During Works
	• A Traffic Control Plan (TCP) shall be prepared by a suitable qualified person and implemented for the works in accordance with the requirements of the Traffic Control at Worksites Manual (RTA 2010 V4) and AS1742.3.	
	<ul> <li>An Access Management Plan shall be prepared to manage internal site traffic and pedestrian movements to ensure the safety of workers and public within the site.</li> </ul>	
	• Where possible, current traffic movements and access will be maintained during the works.	
	Regard to public safety will be maintained at all times.	
	<ul> <li>Appropriate signage will be erected and details will be confirmed by appropriate Project personnel responsible for site safety during the works.</li> </ul>	
	• Traffic delay notifications will be issued to Council at least two weeks prior to commencement of works requiring full or partial road closure.	
	<ul> <li>Neighbouring residents and property owners are to be informed in writing at least two weeks prior with respect to any changes to pedestrian movements, access, and parking restrictions associated with the works.</li> </ul>	
	• For works within the road reserve, the requirements of the Section 138 of the Roads Act 1993 apply. In this regard:	
	- If a driveway is proposed, a Driveway Application should be made, or	
	<ul> <li>If any other works are proposed and/or occupation of the road reserve proposed, a Road Opening Application should be made.</li> </ul>	
	<ul> <li>This application should be made prior to any works commencing within the road reserve and an application fee in accordance with Council's Fees and Charges will apply (Council recommended condition).</li> </ul>	
	• The Proposed Activity is to be in accordance with the concurrence of TfNSW (dated 19/04/2022), including that all work within the road reserve complies with Annexure A plus "Additional TfNSW requirements" provided in the concurrence letter. The additional	

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	requirement relates to no traverse trenching allowed in Shellharbour Rd at the intersection with Lakewood Blvd. Horizontal Underbore direction drilling to be minimum of 1.2m below the road surface level. The contractor would utilise an appropriate methodology consistent with TfNSW concurrence.	
	• If contractors use on-street parking, they would be mindful of local restrictions and availability.	
Noise and Vibration	To minimise construction noise and vibration impacts on nearby sensitive receivers, the following would be implemented:	Prior to Commencement of Works / During Works
	• The mitigation measures outlined in the Acoustic Assessment (relevant to the electricity infrastructure works assessed), prepared by Stantec (September 2022) are to be implemented for the Activity.	
	<ul> <li>Prior to commencement of the Activity, the contractor is to prepare a detailed Construction Noise and Vibration Management Plan (CNVMP). This would identify all feasible and reasonable management measures to minimise noise and vibration impacts on nearby sensitive receivers.</li> </ul>	
	Works be limited to the following EPA recommended construction hours:	
	- Monday to Friday: 7am to 6pm.	
	- Saturday: 8am to 1pm.	
	- Sundays and Public Holidays: No works.	
Air Quality and Energy	The following mitigation measures would be implemented to manage impacts relating to air quality:	During Works
	No materials will be burnt on site.	
	<ul> <li>Vehicles transporting waste or other materials that may produce dust will be covered during transportation.</li> </ul>	
	• Vehicles, machinery and equipment will be maintained in accordance with manufacturer's specifications in order to meet the requirements of the <i>Protection of the Environment Operations Act 1997</i> and associated regulations.	
	<ul> <li>Debris and waste will be immediately collected into appropriate storage facilities and removed from the site as soon as practical to ensure light-weight material is not dispersed by wind gusts.</li> </ul>	
	<ul> <li>Construction works will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.</li> </ul>	

Aspect	Mitigation measure	Timing
	<ul> <li>Machinery and vehicles not in use during construction will be turned off and not left to unnecessarily run idle.</li> </ul>	
	<ul> <li>Dust suppression techniques would be utilised to minimise the potential for dust generation/ dispersal during works, as required.</li> </ul>	
	Disturbed soils would be progressively stabilised.	
Soils and Geology	The following mitigation measures would be implemented to manage impacts relating to soil, erosion and sedimentation:	Prior to Commencement of Works / During Works
	<ul> <li>An Erosion and Sediment Control Plan is required to be prepared prior to works commencing and will form part of the Construction Environmental Management Plan for the Activity. It shall be prepared in accordance with the Landcom/ Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book).</li> </ul>	
	• Before work starts, erosion and runoff controls should be installed to prevent soil erosion, water pollution or the discharge of loose sediment on surrounding land, stormwater systems or watercourses. These controls should be in accordance with the Erosion and Sediment Control Plan and may include the following (where applicable):	
	- erect a silt fence	
	- limit the removal or disturbance of vegetation and topsoil	
	- divert uncontaminated run-off around cleared or disturbed areas	
	- install sediment traps/socks around any stormwater inlets and drainage lines	
	<ul> <li>stockpile topsoil, excavated material, construction and landscaping materials and debris within the site. These should be covered or seeded to prevent loss of these materials</li> </ul>	
	<ul> <li>provide a single vehicle access to the site including measures to prevent the tracking of sediment off the site</li> </ul>	
	<ul> <li>provide adequate control measures to suppress dust (consistent with recommended Council condition).</li> </ul>	I
	<ul> <li>Works would only commence once all erosion and sediment controls have been established. The controls would be maintained in place until the works are complete, and all exposed erodible materials are stable (consistent with recommended Council condition).</li> </ul>	

Aspect	Mitigation measure	Timing
	• The soil and water management controls should be maintained at all times and checked for adequacy daily. The controls must not be removed until the development is completed and the disturbed areas have been stabilised. Maintenance should include but is not limited to ensuring:	
	<ul> <li>all sediment fences, sediment traps and socks are properly placed and are working effectively</li> </ul>	
	- drains, gutters and roads must be maintained clear of sediment at all times.	
	It is an offence under the <i>Protection of the Environment Operations Act 1997</i> to allow soil or other pollutants to fall or be washed into any waters or be placed where it is likely to fall or be washed into any waters. Substantial penalties may be issued for any offence (consistent with recommended Council condition).	
	Disturbance of natural sediments and vegetation would be minimised.	
Hydrology, Flooding and Water Quality	The following mitigation measures would avoid and minimise impacts to hydrology, flooding and water quality.	Prior to Commencement of Works
	Where possible, avoid works during forecast high rainfall events.	
	<ul> <li>A spill containment kit will be available at all times. All personnel will be made aware of the location of the kit and trained in its effective deployment.</li> </ul>	
	• Any required fuels and other liquids will be stored in self-safe chemical storage containers.	
	<ul> <li>All refuelling of plant and equipment will be in appropriately designated areas away from drainage lines or watercourses (at least 40 metres) and managed in order to prevent any potential spills leaving the refuelling area (e.g. use of bunded areas).</li> </ul>	
	Cleaning or washing is not to occur near waterways or drainage lines.	
	<ul> <li>All equipment will be maintained in good working order and operated according to manufacturer's specification.</li> </ul>	
	• No waste and/or wastewater will be discharged directly or indirectly in drains or waterways.	
	<ul> <li>Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) within and adjacent to the site is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls during construction.</li> </ul>	

Aspect	Mitigation measure	Timing
	<ul> <li>The Council and EPA will be notified immediately in response to incidents causing or threatening actual or potential harm to the environment in accordance with section 148 of the POEO Act (via EPA Environment Line on 131 555).</li> </ul>	
	<ul> <li>For the insulation of electric lines, flood compatible materials should be used (consistent with Council recommended condition).</li> </ul>	
	• As Flinders Reserve is in a high hazard zone and floodway both in the 1% AEP flood event and PMF event, it is advised to install "flood risk signage" during the construction works in Flinders Reserve to warn people that the site may be subject to flooding and to follow the designated evacuation routes from the reserve (consistent with Council recommended condition).	
Visual Amenity	The following mitigation measures would be implemented to manage impacts relating to Visual Amenity:	During Works / Completion of Works
	<ul> <li>Vegetation would only be trimmed/removed to the minimum extent necessary to undertake the proposed works.</li> </ul>	
	<ul> <li>Upon completion of construction, any work areas would be restored to an acceptable visual state.</li> </ul>	
	<ul> <li>The construction worksite would be maintained, kept free of rubbish and cleaned up at the end of each workday.</li> </ul>	
Aboriginal Heritage	The Due Diligence Assessment recommends the following to avoid impacts to Aboriginal heritage:	Prior to Commencement of
	<ul> <li>SH-FL01 and SH-FL02-PAD to be registered on AHIMS; and</li> </ul>	Works / During Works
	<ul> <li>Any subsequent ground disturbance works in the vicinity of SH-FL01 and SH-FL02-PAD area will require further investigation and an application of an AHIP to be prepared; and</li> </ul>	
	• The nature of disturbance does not preclude the potential for isolated finds, which is a common site type across the region, even in disturbed contexts. In the event of unexpected Aboriginal objects, sites or places (or it is recommended that: potential Aboriginal objects, site or places) are discovered during construction, all works in the vicinity should cease and the proponent should determine the subsequent course of action in consultation with a heritage professional and/or the relevant State government agency as appropriate; and	
	• This documentation may be summarised within and/or appended to a Development Application (DA), and a Review of Environment Factors (REF). If any Aboriginal objects are later identified within the proposed activity area, this report cannot be used alone to support an application for	

Aspect	Mitigation measure	Timing
	an Aboriginal Heritage Impact Permit (AHIP). Such an application would require more detailed investigation involving a formal process of Aboriginal community consultation and the preparation of an Aboriginal Cultural Heritage Assessment (ACHA); and	
	• If human skeletal material are discovered, the <i>Coroners Act 2009</i> requires that all works should cease, and the NSW Police and the NSW Coroner's Office should be contacted. Traditional Aboriginal burials (older than 100 years) are protected under the <i>National Parks and Wildlife Act 1974</i> and should not be disturbed. Interpreting the age and nature of skeletal remains is a specialist field and an appropriately skilled archaeologist or physical anthropologist should therefore be contacted to inspect the find and recommend an appropriate course of action. Should the skeletal material prove to be archaeological or Aboriginal remains, notification of DPC and the Local Aboriginal Land Council will be required. Notification should also be made to the Commonwealth Minister for the Environment, under the provisions of the <i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i> .	
Non-Aboriginal Heritage	The following mitigation measures will be implemented in order to prevent adverse impacts to any items of non-Aboriginal heritage:	During Works
	• Standard unexpected finds and stop-works procedures are to be in place and implemented if unexpected finds occur during the works. If unexpected archaeological remains or relics are uncovered during the works, all works must cease in the vicinity of the material/find. Council's heritage adviser, and if necessary, Heritage NSW and any other relevant authority, will be contacted. Work would not proceed in the vicinity of the find until appropriate clearance is given.	
Ecology/Biodiversity	The following measures are recommended to avoid and minimise biodiversity impacts during construction:	Prior to Commencement of Works / During Works
	• Preparation of a construction environmental management plan. The plan should incorporate the design, construction and post-construction environmental management measures proposed. This should include (but not be limited to) issues relating to vegetation management, weed control, and erosion and sediment control and should include plans clearly showing areas to be cleared, trees to be retained and any other 'no go zones'. This Site Plan is to be placed in an accessible location to be viewed by all site personnel (site office for example)	-
	<ul> <li>Clearing is to be to the minimum extent necessary. If parts of the development footprint areas are identified during construction as not needing use for construction activities, clearing will be avoided.</li> </ul>	

Aspect	Mitigation measure	Timing
	<ul> <li>Define clearing limits using clearly visible barrier, such as flagging tape. This should be maintained and checked daily through construction.</li> </ul>	
	<ul> <li>Existing trees are legally protected by Council's Tree Preservation Order. Electrical Installer shall ensure that the works will not directly impact the existing trees. Any works identified that requires the removal of protected trees shall not commence unless approved by the Superintendent.</li> </ul>	
	<ul> <li>For bulk and harmful materials, do not store, stockpile, dump or otherwise place under or near trees materials such as oil, waste concrete, clearings and boulders. Prevent windblown materials from harming trees and plants.</li> </ul>	
	When working near trees:	
	- prevent damage to tree bark. Do not attach stays and guys to trees.	
	- do not remove topsoil within the dripline of the trees.	
	<ul> <li>if required, use hand or trenchless methods so that root systems remain intact and undamaged.</li> </ul>	
	<ul> <li>where excavations under tree canopies will be open for some time, ensure that the CTPO is notified of the intent.</li> </ul>	
	• Where root cutting is required for roots more than 50 mm diameter, obtain approval from the CTPO before proceeding. Cut using methods that do not unduly disturb the remaining root system. Immediately after cutting, water the tree and apply a liquid rooting hormone to stimulate the growth of new roots.	
	<ul> <li>Do not compact the ground or use skid-steel vehicles under the tree driplines.</li> </ul>	
	<ul> <li>Sediment controls, including fencing and sediments traps, should be installed in any areas where works will occur in proximity to low lying vegetation or streams.</li> </ul>	
	All weeds should be appropriately removed offsite and where possible, without stockpiling.	
	• If stockpiling of weeds is required before removal from site, weeds are to be stockpiled and appropriately covered and located in areas away from vegetation to be retained to minimise the spread of seed and other propagules.	
	Where feasible it is recommended weeds are cut and roots are kept minimising erosion.	

Aspect	Mitigation measure	Timing
	• Hygiene protocols should be implemented including hygiene procedures for equipment, footwear and clothing. Ensure works vehicles are washed down prior to entering the works area.	
	<ul> <li>Hygiene measures should be implemented as part of the CEMP to minimise the risk of pathogen spread on site and should include procedures for equipment, footwear and clothing. Ensure works vehicles are washed down prior to entering the works area.</li> </ul>	
	Complete post construction weed control activities in accordance with the weed control protocol.	
	<ul> <li>Should any tree removals or works which would provide potential habitat for the Southern Myotis be proposed in the vicinity of Lot 10 DP1281639, the applicant should engage an ecologist to provide advice as to the proposed works. A report should be prepared which outlines the ecologists advice and provides information as to how the project will progress in taking into consideration that advice. This report should be provided to Council (recommended Council condition).</li> </ul>	
Arboriculture	The Arboricultural Impact Assessment prepared by Moree Trees should be provided to Council as requested, and the recommendations of the assessment are to be implemented to avoid and minimise impacts to trees during construction, including:	Prior to Commencement of Works / During Works
	<ul> <li>The site trees numbered in the Arboricultural Impact Assessment are recommended to be added to the survey to enable a more accurate assessment to be undertaken for tree impacts.</li> </ul>	
	<ul> <li>Fill can occur over a TPZ area provided it does not increase levels around the trunk of the tree or shrub. If fill increases above any basal area, then the tree or shrub should be removed.</li> </ul>	
	• Following the site trees being added to the survey, the excavation of trenches within the Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) areas may be possible to undertake through open trenching. This shall be undertaken with a flat bucket excavator so as not to tear roots. A spotter shall be used and excavations shall be undertaken in small increments so as to limit root damage. No roots greater than fifty (50) millimetres in diameter shall be severed. Should large structural woody roots be uncovered, that are greater than fifty (50) millimetres in diameter, these should be retained with infrastructure to be threaded under the roots.	
	<ul> <li>The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ): The TPZ is implemented to ensure the protection of the trunk and branches of the subject tree. The TPZ is a radial measurement based on the Diameter at Breast Height (DBH) of the tree. The SRZ is also a radial measurement from the trunk used to protect and restrict damage to the roots of the tree.</li> </ul>	

Aspect	Mitigation measure	Timing
	In a disturbed situation, such as these trees are growing in, root growth is difficult to predict and is often opportunistic.	
	• The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) have been measured from the centre of the trunk. The following activities shall be avoided within the TPZ and SRZ of the trees to be retained:	
	- Storage of building materials.	
	- Disposal of waste materials, solid or liquid.	
	<ul> <li>Options to avoid open trenching that could adversely impact tree roots should be considered, including directional drilling (underboring), Hydrovac (excavation through high pressure water), or localised hand digging.</li> </ul>	
	• Every effort should be made to retain and protect any trees in the vicinity of the proposed works. The Arboricultural Impact Assessment report by Moore Trees is to be updated at the detailed design phase (including the chosen construction methods to reduce impact) and to assess the encroachments within the TPZ's and SRZ's to ensure the viability of retention. The report is to be completed by an AQF Level 5 Consulting Arborist and be written in accordance with Australian Standard <i>AS4970-2009 Protection of trees on development sites</i> . The updated report be provided to Council for consideration. Any direction from Council as to the replacement of any trees required to be removed should be followed and new tree/s should be protected and maintained during the works (Council recommended condition).	
Bushfire	<ul> <li>Any works within an area mapped as being potentially affected by bush fire hazard should be undertaken in accordance with relevant parts of '<i>Planning for Bush Fire Protection 2019</i>' (consistent with Council recommended condition).</li> </ul>	During Works
Land Uses and Services	The following mitigation measures would be implemented to manage impacts relating to Land Uses and Services:	Prior to Commencement of Works / During Works
	<ul> <li>Any potential services/utility interruptions shall be minimised as far as practical and communicated to the relevant services authorities to enable flow on notifications to any affected services customers.</li> </ul>	
	<ul> <li>HI and its contractors would liaise with Shellharbour City Council regarding any potential asset conflict, as required.</li> </ul>	

Aspect	Mitigation measure	Timing
	• Any damage to public infrastructure, other than that previously noted in the Dilapidation Report, is the responsibility of the applicant/proponent. All damage should be repaired and reinstated prior to the completion of the works. This work should be carried out by Council, or Council approved contractor, at the proponent's/applicant's expense (consistent with recommended Council condition).	
Waste Generation	The following safeguards will be implemented in order to manage potential waste impacts:	Prior to Commencement of
	<ul> <li>A Construction Waste Management Plan is to be prepared prior to commencement of works and form part of the CEMP. It is to detail the framework to reduce waste and manage, recycle or dispose of it responsibly.</li> </ul>	Works / During Works / Completion of Works
	<ul> <li>Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each construction day.</li> </ul>	
	Waste material is not to be left on site once the works have been completed.	
	• The working areas will accommodate separate bins and other waste storage structures to cater for waste streams required to foster waste avoidance, resource recovery and acceptable disposal to a licensed waste management facility.	
	• The resource hierarchy detailed by the <i>Waste Avoidance Resource Recovery Act 2001</i> would be adopted.	
	• Any contaminated waste generated would be disposed of in accordance with the EPA approved methods of waste disposal.	
	Waste will be disposed of at a licensed waste or recycling facility as appropriate.	
Hazardous Materials and Contamination	• Should any contamination or suspect material be encountered during site preparation, earth works, construction or any other stage of the development, works should cease immediately and a suitably qualified consultant engaged to conduct a thorough contamination assessment.	During Works
	In the event that contamination remediation is required, all works should cease and the Council should be notified immediately.	
	All recommendations provided in the contamination assessment (if required) should be followed as stipulated (consistent with Council recommended condition).	
Community Impact / Social Impact	Contractors/workers will be mindful of the needs of the local community.	Prior to Commencement of Works/ During Works

Aspect	Mitigation measure	Timing
	• A minimum of 10 working days notification should be provided to landowners adjacent to the proposed works. Notification should be in writing and provide general details of the works and dates and times where disruption could be expected. Evidence of the notification having been carried out should be provided to Council, prior to the commencement of the works (consistent with Council recommended condition).	
	<ul> <li>Any changes to public or private roads (including private driveways) as a result of the works would be reinstated to an acceptable standard upon completion of the works.</li> </ul>	
	• All works should be undertaken with minimal disruption to the public. In this regard, appropriate signage should be put in place should any footpath obstructions be required, and works within Council reserve areas should be carried out so as to not disrupt, or have minimal disruption on organised sports. Council's Property team can be contacted for further information regarding park bookings (consistent with Council recommended condition).	
Cumulative Impact	The following safeguards will be implemented in order to manage potential cumulative impacts:	Prior to Commencement of
	• Health Infrastructure and project staff shall monitor the Department of Planning and Environment's major projects register and Shellharbour City Council's Development Application tracker for any significant developments that may occur locally and that have potential to coincide with the Activity period and ultimately generate additional adverse cumulative impacts.	Works / During Works
	<ul> <li>Where required, project staff will undertake pre-works review and liaison with other development sites to co-ordinate works and minimise impacts (e.g. delivery times, parking).</li> </ul>	
Other Conditions	Building Plan Approval - Sydney Water	Prior to Commencement of Works / During Works
Recommended by Council	<ul> <li>The plans should be submitted to a Sydney Water Tap in<sup>™</sup> to determine whether the development will affect Sydney Water wastewater and water mains, stormwater drains and/or easements, and if any requirements need to be met. Sydney Water's Tap in<sup>™</sup> online service is available at:</li> </ul>	
	<https: building="" plumbing-building-developing="" sw="" sydney-watertap-<br="" www.sydneywater.com.au="">in/index.htm&gt;</https:>	
	The applicant should ensure that Sydney Water Tap in™ has issued the appropriate electronic approval prior to the commencement of any works.	
	Dilapidation Report	

Aspect	Mitigation measure	Timing
	<ul> <li>The applicant should notify Council of any existing damage to public areas in the vicinity of the development site through the submission of a Dilapidation Report. The report should be supported with suitable photographic records. This information should be submitted to Council prior to the commencement of work.</li> </ul>	
	Survey Certification	
	<ul> <li>A report from a registered surveyor should be prepared. The report should certify all of the following:</li> </ul>	
	a. the distance of the works to adjoining property boundaries and/or existing easements; and	
	b. the depth of works.	
12/01/2023		