Appendix B

Landscape and visual assessment

25 July 2008

EnergyAustralia Sydney CityGrid Project and Belmore Park Zone Substation

Landscape & Visual Impact Assessment

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Contents

1.0 Introduction

1.1 Project Scope

This report has been prepared to be part of Environmental Assessment Reports for the EnergyAustralia (EA) Sydney CityGrid and Belmore Park substation projects. The focus of this report is the visual and physical impacts of the proposal, which are evident on the surface. In particular, this report is concentrating on the impacts of the proposals on the public domain as well as temporary impacts during construction.

The report describes the main built structures separately that have an impact on the public domain. These include the Belmore Park Substation, Riley Street Sub Transmission Switching Station (STSS), the City East Zone Substation and the Dalley Street Zone Substation, as well as the potential Services and Control Room at Cook & Phillip Park. Some of the proposals for these structures are well developed, allowing more specific assessment of visual and physical impacts. Where the proposals are currently less developed, the impacts and mitigation measures are put forward in this report as guidelines for assessing the likely impacts of the project elements in future Project Application Environmental Assessment Reports (EAR) given their anticipated design and locational characteristics.

The substations and STSS, in some circumstances are part of larger buildings or site development proposals. The assessment for the aspects of the proposal related to the EA Sydney CityGrid project should be considered in the totality of the development as a whole. Examples of integrated and site sensitive design of substations are given below in Section1.2.

There are also expected to be places of site disturbance due to construction access. The likely impacts and mitigation of these works are summarised in the last section titled Surface Works in General.

1.2 Contemporary Substation Design Precedents

The modern era of electricity substation design sees architects and local communities playing a part in developing projects to meet the needs of electricity users across EnergyAustralia's network.

EnergyAustralia is committed to meeting the challenge of providing new infrastructure to ensure that a high quality power supply, and to develop the project in a way that is complementary to the local neighbourhood. A key to modern substations in residential or high profile commercial locations is the indoor or predominantly indoor layout with no visually apparent electrical equipment, from outside the boundary of the site. The buildings are designed to blend into the local streetscape, from suburban homes to prime CBD property.

Also playing a part in ensuring substations are good neighbours is the modern technology equipment utilised, with compact design and low noise emissions.
EA actively seeks input from the local community into the exterior design, including architectural features, landscaping, fencing and building materials, ensuring a best possible balance with the technical, environmental and financial limitations of the project.

Examples of modern substation developments include the Campbell Street Zone substation in Surry Hills, the new City North Zone substation under construction in the heart of Sydney's CBD, as well as substations in suburban settings under construction at Kogarah and Kingsford and a recently completed substation in inner Newcastle.
Examples of such developments are illustrated below.

Image 1 - Photomontage of City North Zone substation currently under construction (Sussex and Erskine Streets, Sydney)

Image 2 - Campbell Street Zone substation (Surry Hills)

Image 3 - Photomontage of Kogarah Zone substation currently under construction (corner of Railway Parade and English Street).

2.0 Belmore Park Substation

2.1 Proposal

A zone substation integrated with a commercial/retail development is proposed on the corner of Pitt, Campbell and Hay Streets Sydney. The proposed substation layout allows the residual space above the substation to be used for commercial/retail development. The gas insulated transformers are proposed to be configured in a single row along the eastern site boundary, with an additional level on top of the substation to accommodate sealed radiators for cooling the transformers. The use of the remaining space above the substation is proposed for commercial development. Key visual and public domain aspects of the proposal include:

- orientate the building to Belmore Park with its mature trees and landscaped setting;
- define a built edge to Belmore Park and encourage greater use and surveillance of the park;
- activate the Hay, Campbell and Pitt Street frontages within the proposed commercial/retail development;
- provide an integrated pedestrian through-site mid-block connection between Hay and Campbell Streets;
- create an integrated development outcome for the building as a whole with a high quality design; and
- incorporate in the pedestrian through-site connection public environmental art, sculpture or installation that animates the space and helps establish an identity for the through site link and whole building. The use of lighting for night-time expression should be explored.

2.2 Urban and Landscape Character of Area

The surrounding area for the Belmore Park Site is a mixture of retail, commercial, entertainment and residential land uses. The site is at the south eastern edge of the CBD, in close proximity to Central Railway Station. The elevated railway lines to the east of the site form an implied edge to the city and a boundary to the Surry Hills precinct. Belmore Park to the south of the site is a formal urban green park. It is important as a thoroughfare from the Eddy Avenue entry to the Central Station into the CBD. Refer to Figure 1 below.

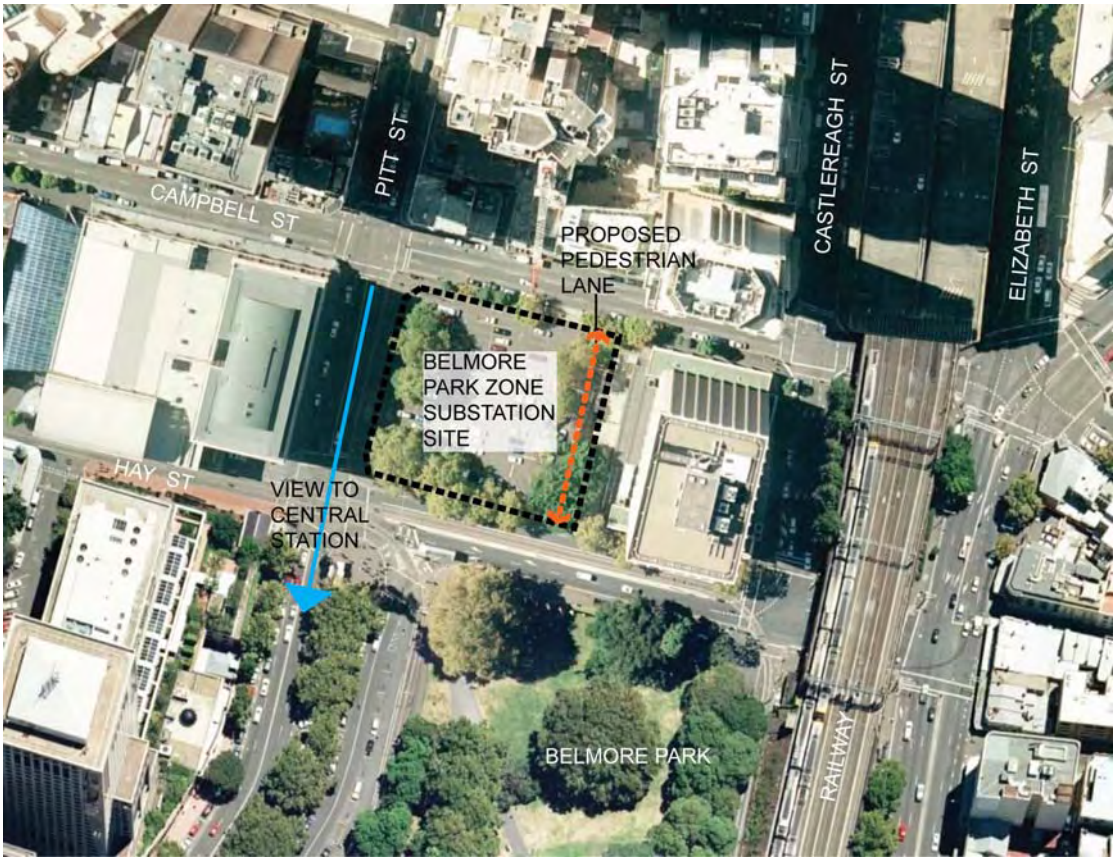

Figure 1 – Belmore Park Zone Substation site.

2.3 Controls and Planning Instruments

The following Planning instruments should be used to inform the design review of the project. The LEP and DCP outlines guidelines, objectives and controls relevant to the Belmore Park Substation Site.

Sydney LEP 2005

- The Sydney LEP includes the Belmore Park Zone substation site in the City Centre zone.
- Site specific controls for the building heights to achieve sun access to Belmore Park
- Clause 28D – Design excellence

Central Sydney DCP 1996

- New public access way along eastern boundary

Sydney Streets Design Code - City of Sydney

- Pitt, Campbell and Hay Streets are designated as CBD Streets in the Design Code.
- Granite flagstone, stone kerbing and tree planting required for streets.

2.4 Visual and Physical Impacts

The visual and physical impacts of the proposed Belmore Park Zone Substation in response to location, scale, materials and street activation are reviewed and assessed in Table 1 below.

Table 1 – Assessment of Belmore Park Zone Substation

Scale	Impact
The location and appearance of the substation facilities are integrated with the overall building form.	Low impact in terms of substation scale. Integrated into overall built form.
The horizontal frontage of the substation is continuous along the pedestrian laneway.	The large single horizontal form of the facade creates a potentially monotonous frontage.
Materials and Finishes	
Building façade has significant presence in the streetscape and should be designed to integrate with materials from buildings nearby.	Building façade should be articulated, and integrate with local building forms and materials. Exterior façade of the substation building to be cohesive with the building design for the Belmore Park Zone Substation Site.
Street Activation	
The substation is located along the street edges of Campbell St and Hay St and fronting the new pedestrian lane.	The building use presents a blank façade and does not activate the street.
Views	
Views are created through the site along the new pedestrian lane – through site link.	View corridor established between Campbell St and Hay St, with views to Belmore Park.

2.5 Mitigation Measures

Table 2 below provides a summary of the main issues identified and the resultant mitigation measures that have been developed.

Table 2 – Mitigation measures for Belmore Park Zone Substation

Issues	Mitigation measures
Visual impact of the external appearance of the substation on the streetscape and public areas.	• Substation to be integrated with new built form. • Façade along street frontages to be designed to be appropriate scale, materials and form to integrate with adjacent built form, and articulated to provide variation in the façade.
Location of substation reduces activation of new through site link.	• Façade along pedestrian laneway to be designed with visual interest and artwork opportunities. • Provide lighting to high standard to ensure visibility along through site link and to streets.
Impact of development on streetscape	• Pavement and lighting upgrade to City of Sydney public domain standards.
Impact of development on existing trees	• Existing street trees on footpath to be retained and protected during construction. • Existing trees on site to be removed to accommodate proposal. • New street trees to be incorporated in the streetscape with types and arrangement as recommended in the City of Sydney Street Tree Master Plan.

2.6 Mitigation Measures and Safeguards Review

The further assessment and review of the mitigation measures will need to be undertaken at different stages as the project progresses. The following table outlines the main mitigation measures and appropriate review periods.

Table 3 – Mitigation Measures and Safeguards Review for Belmore Park Zone Substation

Planning and Design
• Review substation design to ensure integration with new building • Review substation exterior materials and facade design in association with the design of the overall site development and building design. • Review public domain design and artwork proposals for laneway / through site link.
Construction
• Existing street trees on footpath to be retained and protected during construction. • New tree planting to be in accordance with City of Sydney requirements / standards. • Pavement and lighting upgrade to City of Sydney public domain standards.
Monitoring
• Maintenance of built works, and public domain fixtures and fittings. • Planting establishment.

3.0 Sub Transmission Switching Station - Riley Street Surry Hills

3.1 Proposal

The STSS is proposed on part of the site located on Riley Street between Ann and Albion Streets. At this stage the extent of development proposed for the entire site is not known.

The site itself is currently a derelict site with excavation into the sandstone bedrock. The excavated area allows ease of locating a bulk of the facilities underground, minimising the bulk of the building aboveground.

Key aspects of the proposal include:

- The substation utilises approximately 25% of the site area.
- The current proposal is for the STSS to be located along the Ann Street frontage, with a narrow frontage on Riley Street.
- The STSS building proposal is approximately 2 storeys on the Riley Street frontage (with 2 storeys underground) down to 1 storey high along Ann Street (with 3 storeys underground) due to the slope of the land.
- Potential exists to integrate the proposed services shaft and control room within the STSS.

3.2 Urban and Landscape Character of Area

The surrounding Surry Hills area is dominated by 2-3 storey terrace housing with a mixture of commercial uses in larger buildings such as former warehouse developments. Frog Hollow Reserve is located opposite the site.

Riley Street is the primary street frontage for the site. In the immediate vicinity of the site, the built form is generally 2-3 storey terraces with 4-6m wide frontages.

Ann Street is steeply sloping with terraces stepping up along the slope of the street.

Albion Street is steeply sloping with larger multi-unit residential buildings to the south of the site. The multi residential building is 5-6 storeys high with a garage and blank façade at ground level. The commercial premises immediately to the south-east of the site on Albion Street is 3-4 storeys high, with windows overlooking the site.

Buildings at the rear of the site (eastern side) include residential and commercial premises. The commercial and multi residential buildings present mostly blank façade to the site at lower levels. Refer to Figure 2 below.

Figure 2 – STSS at Riley Street Surry Hills

3.3 Controls and Planning Instruments

The following Planning instruments should be used to inform the design review of the project. The DCP outlines guidelines, objectives and controls relevant to the STSS.

Former South Sydney DCP .

- DCP Part B: Urban Design Principles
- DCP Part F: Design Criteria for Specific Types

Sydney Streets Design Code - City of Sydney

- The streets in the area designated as local streets.

- Asphalt pavement, concrete kerbing (or stone infill) and tree planting required for streets.

3.4 Visual and Physical Impacts

The visual and physical impacts of the proposed STSS in response to location, scale, materials and street activation are reviewed and assessed in Table 4 below.

Table 4 – Assessment of STSS at Riley Street Surry Hills

Scale	Impact
The proposed building of 1-2 storeys above ground level is within scale of the surrounding buildings.	Low impact in terms of height and views retained over built form.
The horizontal scale of the building creates a large single building form along the street edge.	The large single horizontal form of the building is in contrast with the surrounding buildings, in particular along Ann Street and Riley Street.
Mass	
The bulk and form of the building takes up only a small portion of the site.	The relative small size of the building allows the mass of the overall development area to be articulated.
The orientation of the building form along the street front creates a large built mass on the street edge.	The mass of the building along a single street front is in contrast with the other building form along the street.
Materials and Finishes	
Building façade and roofing will have significant presence in the streetscape and should be designed to integrate with materials from the diverse range of buildings nearby.	Building façade should integrate with local building forms and materials.
Street Activation	
The STSS is located along the street edge.	The building use presents a blank façade and does not activate the street.
Views	
The STSS building façade will be visible from the street and neighbouring properties.	The building façade would have a significant impact on the streetscape.
Residences and commercial properties to the rear of the site would overlook the STSS building.	The height and form of the proposed building would have minimal impact on views from buildings at the rear of the site.

3.5 Mitigation Measures

Table 5 below provides a summary of the main issues identified and the resultant mitigation measures that have been developed.

Table 5 – Mitigation measures for STSS at Riley Street Surry Hills

Issues	Mitigation Measures
Visual impact of the external appearance of the STSS on the streetscape and public areas.	• Façade and vehicle entrances along street frontages to be designed to be appropriate scale, materials and form to integrate with adjacent built form. • Building set back with planting along Ann Street to be considered to provide separation to residences.
Views across development site from residences behind.	• Design of roofing form to consider views from above with appropriate materials, form and low reflectivity.
Location of STSS reduces possible activation of street frontages.	• Consideration to location of other uses in the building that contributes to the local urban amenity such as commercial or residential uses.
Impact of development on streetscape.	• Pavement and lighting upgrade to City of Sydney public domain standards.
Impact of development on existing trees.	• Existing street trees on footpath to be retained and protected with fencing and hoarding during construction. • No existing trees within the building site.

3.7 Mitigation Measures and Safeguards Review

The further assessment and review of the mitigation measures will need to be undertaken at different stages as the project progresses. The following table outlines the main mitigation measures and appropriate review periods.

Table 6 – Mitigation Measures and Safeguards Review for STSS at Riley Street

Investigations for future Project Approval EAR
• Develop options for the location and orientation of the STSS within the site to achieve best outcome for urban frontage. • Review STSS design. • Review STSS exterior materials and facade design in association with the design of the overall site development and building design. • Review public domain impacts / design for streetscape.
Construction
• Existing street trees on footpath to be retained and protected during construction. • New tree planting to be in accordance with City of Sydney requirements / standards. • Pavement and lighting upgrade for streetscape to City of Sydney public domain standards.
Monitoring
• Maintenance of built works. • Planting establishment.

4.0 Services Shaft & Control Room – Cook & Phillip Park

4.1 Proposal

An alternative location for the proposed Services Shaft and Control Room is in the St Mary's Road / Yurong Parkway / Cook and Phillip Park / Domain vicinity.

The size and form of the ventilation shaft which would project above the ground is understood to be in the order of up to 4m wide and 3m high.

4.2 Urban and Landscape Character of Area

Cook and Philip Park and the Domain form part of a 'green belt' along the eastern edge of the CBD extending from Hyde Park to the Royal Botanic Gardens. The parklands are highly valued and sensitive to locations of any new structures.

The parklands frontage along St Mary's Rd, Yurong Parkway and Sir John Young Crescent has a varied edge condition including large retaining walls and the Domain car park building. The retaining walls create low areas, which are less visible from within the park. Refer to Figure 3 below.

The buildings facing Yurong Parkway and Sir John Young Crescent running alongside the park edge are highly varied including residential, commercial and hotel uses.

Figure 3 – Services Shaft & Control Room – Cook and Phillip Park

4.3 Controls and Planning Instruments

The following Planning instruments should be used to inform the design review of the project. The LEP and DCP outline guidelines, objectives and controls relevant to the Services Shaft and Control Room.

Sydney LEP 2005

- Part 3. Division 6 – Parks and Community Places Zone

Cook and Phillip Park Draft Plan of Management

Sydney Streets Design Code - City of Sydney

- The streets in the area designated as local streets.
- Asphalt pavement, concrete kerbing (or stone infill) and tree planting required for streets.

4.4 Visual and Physical Impacts

The visual and physical impacts of the proposed services shaft and control room in response to scale, mass and materials and views are reviewed and assessed in Table 7 below.

Table 7 – Assessment of Services Shaft & Control Room at Cook & Phillip Park

Scale	Impact
The size of the shaft is of a size that would be visible within the park.	The shaft would be a relatively large-scale element if located within the grassed or planted areas within the park.
The size and form of the shaft would create a physical obstruction within the park.	The shaft would create a minor obstruction to through movement in the park.
Noise	
It is expected that the ventilation shaft would be audible within the park.	The noise would create a level of disturbance within the quieter areas of the park.
Materials and Finishes	
The exterior finishes would have a significant presence in the park and surrounds.	The exterior materials and finishes should integrate with local building forms and materials.
Views	
The shaft would be visible with the park when viewed from a distance.	The shaft would contrast with the surrounding green park landscape, but would integrate with walls buildings adjacent.
The shaft would create obstacles to views within the park from a close distance.	The shaft would create a visual barrier within the park.

4.5 Mitigation Measures

Table 8 below provides a summary of the main issues identified and the resultant mitigation measures that have been developed.

Table 8 – Mitigation measures for Services Shaft & Control Room at Cook & Phillip Park

Issues	Mitigation Measures
Visual impact of the shaft on the park.	• Structure to be located in area of least visibility from within the park and also away from key views into the park. Refer Figure 3. • Structure should be integrated with existing built elements rather than being an isolated structure within the park. • Preferred location of structure is at lower level along Sir John Young Cres / St Mary's Rd against retaining walls set within planting areas, or against the Domain Car Park building.
Physical impact of structure in the park.	• Locate away from major park uses and pathways.
Impact on park character.	• Selection of form and materials to integrate with the park surroundings.
Impact of shaft on existing trees.	• Locate structure away from any existing trees.

4.6 Mitigation Measures and Safeguards Review

Further assessment and review of the mitigation measures will need to be undertaken at different stages as the project progresses. The following table outlines the main mitigation measures and appropriate review periods.

Table 9 – Mitigation Measures and Safeguards Review for Services Shaft and Control Room

Investigations for future Project Approval EAR
• Develop options for the location and orientation of the Shaft and Control Room within the local are and the Cook and Phillip Park / Domain site to achieve preferred location with the least visual and physical intrusion. • Review shaft design. • Review shaft / control room exterior materials and design to determine appropriateness for location. • Review any potential impacts on trees. • Review public domain design / proposals for areas of the park or street that are impacted by works. • Determine any disruption to pedestrian or traffic movements in the construction period or in the long term, and period of construction on site.
Construction
• Existing trees to be retained and protected during construction. • Site protection and temporary pedestrian deviations as required. • New planting to be in accordance with City of Sydney requirements / standards. • Pavement and lighting upgrade for park or street works to City of Sydney public domain standards.
Monitoring
• Maintenance of built works. • Planting establishment.

5.0 City East Zone Substation

5.1 Proposal

A substation integrated with a commercial/retail development is proposed in the eastern CBD area of Sydney in the vicinity of Phillip Street and Bent Street (the final location has not yet been confirmed). The proposed substation layout allows the residual space around and above the substation to be used for commercial/retail development.

Key aspects of the overall site proposal include:

- Orientate the building to the street.
- Activate the street frontages within the proposed commercial/retail development.
- Create an integrated development outcome with a high quality design overlay to an otherwise functionally driven zone substation.

5.2 Urban and Landscape Character of Area

The Sydney CBD location is a mixture of retail and commercial land uses. The site is at the eastern area of the CBD.

5.3 Controls and Planning Instruments

Sydney LEP 2005

- The Sydney LEP includes the City East Zone Substation site in the City Centre zone.
- Site specific controls for the building heights to achieve sun access to The Domain.
- Clause 28D – Design excellence

Central Sydney DCP 1996

Sydney Streets Design Code - City of Sydney

- City streets are designated as CBD Streets in the Design Code.
- Granite flagstone, stone kerbing and tree planting required for streets.

5.4 Visual and Physical Impacts

The visual and physical impacts of the proposed City East Zone Substation in response to scale, materials and street activation of the substation frontage are reviewed and assessed in Table 10 below.

Table 10 – Assessment of City East Zone Substation

Scale	Impact
The proposed substation facilities to be within scale of the development and surrounding buildings.	Low impact in terms of substation scale. Integrated into overall built form.
Materials and Finishes	
Building façades have significant presence in the streetscape and should be designed to integrate with materials from buildings nearby.	Building façade should be articulated, and integrate with local building forms and materials. Exterior façade of the substation building to be cohesive with the building design for the City East Zone Substation Site.
Street Activation	
The substation should be located away from street frontage as much as possible.	The substation use presents a blank façade and does not activate the street.

5.5 Mitigation Measures

Table 11 below provides a summary of the main issues identified and the resultant mitigation measures that have been developed.

Table 11 – Mitigation measures for City East Zone Substation

Issues	Mitigation Measures
Visual impact of the external appearance of the substation on the streetscape and public areas.	• Substation to be integrated with new built form • Façade along street frontages to be designed to be appropriate scale, materials and form to integrate with adjacent built form, and articulated to provide variation in the façade.
Location of substation reduces activation of street frontage.	• Façade along street fronts to be designed with visual interest and artwork opportunities. • Extent of substation fronting the street to be minimised where possible.
Impact of development on streetscape,	• Pavement and lighting upgrade to City of Sydney public domain standards.
Impact of development on existing trees.	• Existing street trees on footpath to be retained and protected during construction.

5.6 Mitigation Measures and Safeguards Review

The further assessment and review of the mitigation measures will need to be undertaken at different stages as the project progresses. The following table outlines the main mitigation measures and appropriate review periods.

Table 12 – Mitigation Measures and Safeguards Review for City East Zone Substation

Investigations for future Project Approval EAR
• Develop options for the location and orientation of the Substation within the site to achieve best outcome for urban frontage. • Review Substation design. • Review Substation exterior materials and facade design in association with the design of the overall site development and building design. • Review public domain impacts / design for streetscape.
Construction
• Existing street trees on footpath to be retained and protected during construction. • New tree planting to be in accordance with City of Sydney requirements / standards. • Pavement upgrade for streetscape to City of Sydney public domain standards.
Monitoring
• Maintenance of built works. • Planting establishment.

6.0 Dalley Street Zone Substation

6.1 Proposal

A refurbishment or replacement of the existing Zone Substation in Dalley Street is proposed in the northern CBD (the final extent of works and level modification has not yet been confirmed).

Key aspects of the overall site proposal include:

- Create an integrated development outcome with a high quality design overlay to an otherwise functionally driven zone substation.

6.2 Urban and Landscape Character of Area

Dalley Street is a small laneway scale street with mainly utilitarian 'back of house' uses. The site is at the northern area of the CBD.

6.3 Controls and Planning Instruments

Sydney LEP 2005

- The Sydney LEP includes the Dalley Street Substation site in the City Centre zone.
- Clause 28D – Design excellence

Central Sydney DCP 1996

Sydney Streets Design Code - City of Sydney

- City streets are designated as CBD Streets in the Design Code.
- Granite flagstone, stone kerbing required for streets.

6.4 Visual and Physical Impacts

The visual and physical impacts of the proposed Dalley Street Zone Substation in response to scale, materials and street activation of the substation frontage are reviewed and assessed in Table 13 below.

Table 13 – Assessment of Dalley Street Substation

Scale	Impact
The proposed substation facilities to be within scale of the development and surrounding buildings.	Low impact in terms of substation scale. Integrated into overall built form.
Materials and Finishes	
Building façades have significant presence in the streetscape and should be designed to integrate with materials from buildings nearby.	Building façade should be articulated, and integrate with local building forms and materials. Exterior façade of the substation building to be cohesive with the building design for the Dalley Substation Site.
Street Activation	
The street has minimal existing street front activity.	The substation use presents a blank façade and does not activate the street.

6.5 Mitigation Measures

Table 14 below provides a summary of the main issues identified and the resultant mitigation measures that have been developed.

Table 14 – Mitigation measures for Dalley Street Substation

Issues	Mitigation Measures
Visual impact of the external appearance of the substation on the streetscape and public areas.	• Substation to be integrated with new built form • Façade along street frontages to be designed to be appropriate scale, materials and form to integrate with adjacent built form, and articulated to provide variation in the façade. • Façade along street fronts may be designed with visual interest and artwork opportunities.
Impact of development on streetscape.	• Pavement and lighting upgrade to City of Sydney public domain standards.

6.6 Mitigation Measures and Safeguards Review

The further assessment and review of the mitigation measures will need to be undertaken at different stages as the project progresses. The following table outlines the main mitigation measures and appropriate review periods.

Table 15 – Mitigation Measures and Safeguards Review for Dalley Street Substation

Investigations for future Project Approval EAR
• Develop options for the location and orientation of the Substation within the site / existing building. • Review Substation design. • Review Substation exterior materials and facade design in association with the design of the overall site development and building design. • Review public domain impact / design for streetscape.
Construction
• Pavement upgrade for streetscape to City of Sydney public domain standards.
Monitoring
• Maintenance of built works.

7.0 Surface Works in General

7.1 Proposal

Where proposed works require access to the surface for tunnelling or access shafts, there will be temporary impacts on the immediate environment. The impacts are not long term, and are focussed on the construction period. Listed in Table 16 below are the sites of proposed works that impact on the surface.

Table 16 – Anticipated Locations of Surface Works

Item	Description of Works	Location
1	CECT Launch Cavern, CBD Tunnel Extension, City East Cable Tunnel	Riley Street Site
2	Potential Stub Tunnels (x3)	From shaft locations
3	Underwood St Shaft	Underwood Street (or potentially Gresham Street)
4	Cook and Phillip Park Shaft	Yurong St / Sir John Young Cres
5	City East Shaft	City East Substation, Corner of Bent and Phillip Street Sydney CBD.
6	Surface Works (General)	Around Dalley , Bent, Bridge and Gresham Streets
7	Access shaft	Wade Place Surry Hills

7.2 Site Impacts During and Post Construction

The following impacts have been identified for the surface works as a result of construction. Other site impacts for the larger substations and STSS were dealt with earlier in this report. For larger development sites, footpaths and street access would generally remain unimpeded, and repair to any disturbances to existing streetscape and public domain would be undertaken generally at completion of the development.

Table 17 – Site Impacts During Construction

Impacts	Mitigation Measures
Physical impacts of the surface works site.	• Works area would be enclosed with temporary fencing with partial screening where required. • Disturbances at surface to public domain pavement or landscape areas would be replaced with quality to match existing quality or upgraded as required. • Works in streets to meet City of Sydney Design Code standard details. • Works in parks or public spaces to be undertaken to meet quality and standard of existing situation or to standard of adjacent works.
Visual impact of the shaft construction on the park.	• Works area would be enclosed with temporary fencing with partial screening where required.
Access around the works site.	• Detours and diversions for traffic and pedestrian movement would be instigated to ensure through movement is possible.
Long term impacts.	• Public domain reinstatement to City of Sydney public domain standards. • New trees / planting or landscape areas to maintained for a given period (6 months) to ensure planting establishment.
Impact of shaft on existing trees.	• Locate structure away from any existing trees. • Monitor and record quality of trees in immediate vicinity.

7.3 Mitigation Measures and Safeguards Review

The further assessment and review of the mitigation measures would need to be undertaken at different stages as the project progresses. The following table outlines the main mitigation measures and appropriate times for review and assessment .

Table 18 – Mitigation Measures and Safeguards Review for General Surface Works

Investigations for future Project Approval EAR
• Develop refined understanding of local construction impacts. • Review construction proposals. • Review any potential impacts on trees. • Review public domain design / proposals for areas of the parks or streets that are impacted by works. • Determine any disruption to pedestrian or traffic movements in the construction period or in the long term, and period of construction on site.
Construction
• Existing trees to be retained and protected during construction. • Site protection and temporary pedestrian deviations as required. • New planting to be in accordance with City of Sydney requirements / standards. • Pavement upgrade for park or street works to City of Sydney public domain standards.
Monitoring
• Maintenance of built works. • Planting establishment.