EnergyAustralia®
We're on it

Stage 2D of the Sydney CityGrid Project

SUBMISSIONS RESPONSE AND PREFERRED PROJECT REPORT

FEBRUARY 2011

Contents

Table Index

Figure Index

Appendices

1. Introduction

1.1 Background

EnergyAustralia developed the Sydney CityGrid Project as an integrated program of works to upgrade critical electricity infrastructure in Sydney's central business district (CBD). The Sydney CityGrid Project is comprised of a number of discrete but interrelated components.

The Sydney CityGrid Project requires approval under Part 3A of the EP&A Act and the Minister for Planning is the approval authority. The Minister for Planning granted the following approvals under Part 3A of the EP&A Act for the Sydney CityGrid Project on 20 September 2009:

- Concept Approval for the Sydney CityGrid Project; and
- Project Approval for Stage 1 which relates to works at the Belmore Park Zone Substation site.

The Concept Approval specified that additional environmental assessment is required to obtain Project Approval for those components of the project that comprise Stage 2 of the Sydney CityGrid Project, including the City East Cable Tunnel (CECT), City South Cable Tunnel (CSCT) extension and Dalley Street Zone substation refurbishment. As a result, Project Approval is now required to allow the construction and operation of the CECT and CSCT extension.

The CECT and CSCT extension are essential components of the overall Sydney CityGrid Project. Under the Concept Approval these components are identified as Stage 2D and 2E respectively. EnergyAustralia is seeking Project Approval for these works which are collectively referred to as Stage 2D of the Sydney CityGrid Project.

EnergyAustralia prepared an Environmental Assessment for Stage 2D of the Sydney CityGrid Project that was publicly exhibited by the Department of Planning between 11 November 2010 and 10 December 2010 and between 15 December 2010 and 21 January 2011. A total of 15 submissions were received from 14 parties during the exhibition period and the Director-General required that EnergyAustralia respond to issues raised in the submissions in accordance with Section 75H(6) of the EP&A Act. This document details EnergyAustralia's response to the submissions.

The Department of Planning will evaluate the Environmental Assessment and the Submissions Report giving consideration to the issues raised in submissions received during the exhibition period.

EnergyAustralia may proceed with the project if it is approved under Part 3A of the EP&A Act.

1.2 Purpose of this report

During exhibition of the Environmental Assessment, the community and other stakeholders were invited to make submissions to the Department of Planning and a total of 15 submissions were received.

The purpose of this report is to address the requirements of Section 75H(6) of the EP&A Act as requested by the Director-General by:

- Responding to the issues raised in submissions received during exhibition of the Environmental Assessment;
- Providing a Preferred Project Report that outlines proposed changes to the project described in the Environmental Assessment; and
- Finalising the draft Statement of Commitments that was provided in the Environmental Assessment.

This Submissions Report and Preferred Project Report should be read in conjunction with the Environmental Assessment for Stage 2D.

1.3 Overview of the project

The main works associated with Stage 2D involve:

- The 3.2 km CECT between a site on the corner of Albion Street and Riley Street, Surry Hills, and the City North Zone Substation at northern end of the CBD, with connections to the proposed City East and existing Dalley Street Zone Substations;

- Extending the existing CSCT by approximately 150 m between the existing Surry Hills shaft at Wade Place, Surry Hills, and the site proposed for the Riley Street STSS on the corner of Albion and Riley Streets, Surry Hills; and
- If required, refurbishment of the existing Dalley Street Zone Substation involving replacement of equipment such as switchgear. This would require a shaft in Dalley Street to connect the CECT to the Dalley Street Zone Substation.

The primary objective of Stage 2D is to construct and operate infrastructure which is critical to the overall Sydney CityGrid Project. The CECT and CSCT extension and associated works would contribute to meeting the overall objectives of the Sydney CityGrid Project.

1.4 Change to the project following exhibition of the Environmental Assessment

Stage 2D of the Sydney CityGrid Project was described in Chapter 6 of the Environmental Assessment and included details on the proposed refurbishment of the Dalley Street Zone Substation, which included construction of a shaft beneath Dalley Street to connect the CECT to the zone substation.

Since exhibition of the Environmental Assessment, Stage 2D has been changed such that approval is no longer sought to refurbish the Dalley Street Zone Substation (refer to Section 3.1) and the alignment of the CECT has been refined to accommodate this change (refer to Figure 3-1 and Section 7).

1.5 Structure of this report

This Submissions Response and Preferred Project Report is structured as follows:

- **Chapter 1**: provides an introduction and background to this report;
- **Chapter 2**: provides an overview of the project that is described in the Environmental Assessment;
- **Chapter 3:** provides the Preferred Project Report that details changes to the project that have been developed since exhibition of the Environmental Assessment;
- **Chapter 4:** provides responses to the issues raised in submissions received during the exhibition period;
- **Chapter 5:** provides the final Statement of Commitments that include revisions to reflect changes to the project and address issues raised in submissions, if necessary; and
- **Chapter 6:** concludes the report.

2. Overview of the project described in the Environmental Assessment

2.1 Stage 2D of the Sydney CityGrid Project

During the next decade, EnergyAustralia must replace critical electrical infrastructure within the Sydney CBD that is due for retirement and to comply with new licence requirements for operation of substations and transmission feeders. This licence requirement specifies that all city zone substations and transmission feeders must achieve an 'n-2' capacity which means that they must be able to supply the full electricity demand with any two transformers or feeders out of service.

EnergyAustralia has developed an integrated strategy to construct new infrastructure or refurbish existing infrastructure, while maintaining sufficient spare capacity to ensure an ongoing and reliable electricity supply. This strategy is referred to as the Sydney CityGrid Project. The components of the Sydney CityGrid Project are detailed in Figure 2-1.

A key component of the project is Stage 2D which is described in Chapter 6 of the Environmental Assessment. Stage 2D involves the CECT, CSCT extension, and refurbishment of the existing Dalley Street Zone Substation.

The components of Stage 2D are required to allow for the connection of five feeders from the Riley Street Subtransmission Station to the new City East Zone Substation. Two 132kV feeders would run between the new City East Zone Substation and the Dalley Street Zone Substation, two 132kV feeders would run between the new City East Zone Substation and the existing City North Zone Substation, and two 132kV feeders would run between the Dalley Street Zone Substation and the City North Zone Substation.

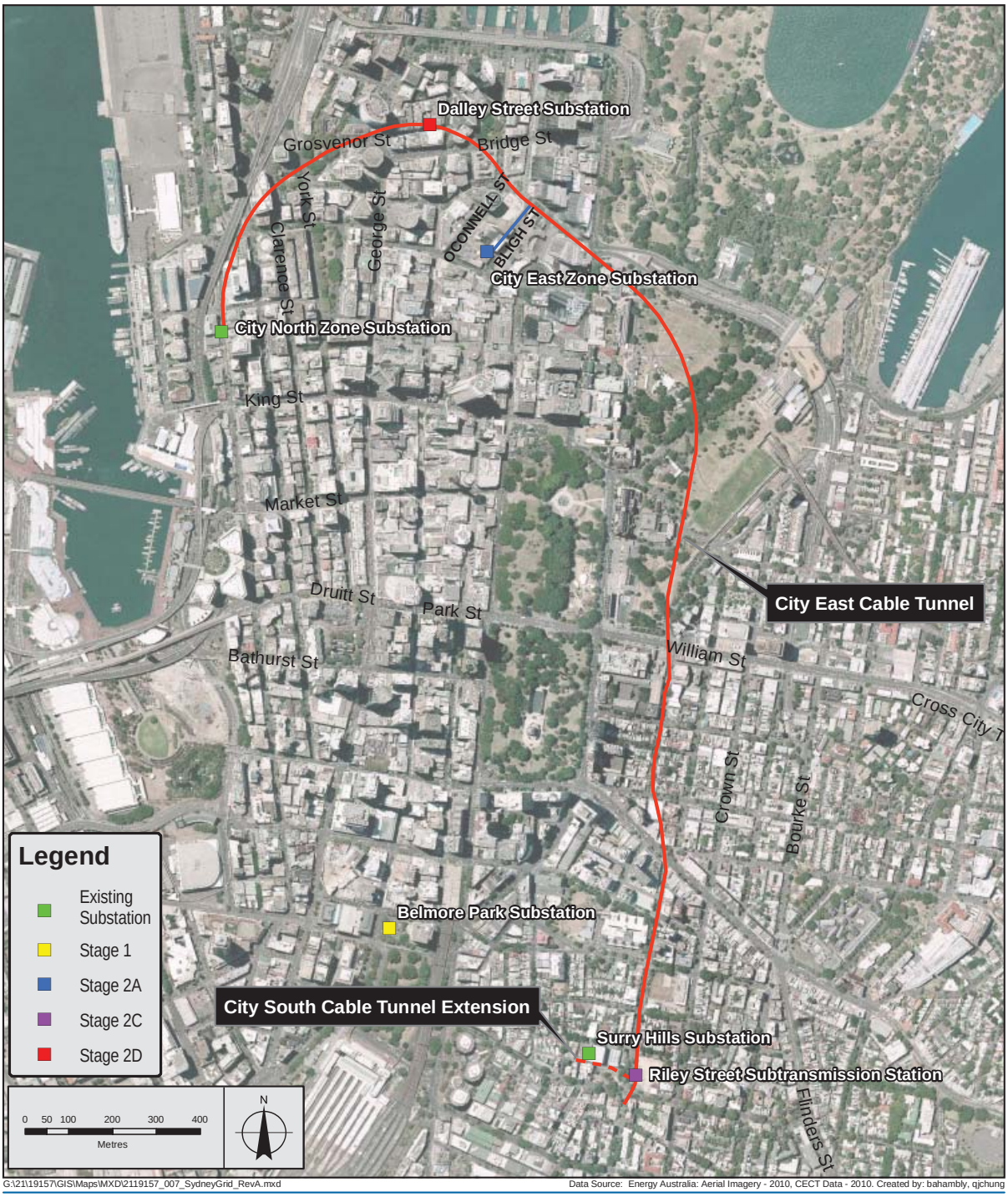
A new subtransmission switching station (STSS) is required at Riley Street, Surry Hills to connect the eastern CBD load and the 132kV supply to the Eastern Suburbs. This STSS would also provide 132kV connections for a future bulk supply point to be located immediately adjacent to the STSS by TransGrid, post 2020.

The CSCT extension is required to connect the Surry Hills Substation in Ann Street to the future Riley Street STSS. This tunnel would also enable connections to existing 33kV feeders and new 132kV feeders from the Rose Bay Substation.

The Dalley Street Zone Substation contains internal plant and equipment such as switchgear that is nearing the end of its operational life and is due for retirement. The substation would be refurbished and this would involve replacing existing plant and equipment to ensure that it continues to function effectively as part of the CBD electricity network.

Stage 2D is both needed and justified as all stages of the Sydney CityGrid Project are integrated and interdependent. Failure to construct this stage would compromise the ability to achieve the objectives of the overall project.

Figure 2-1 Components of the Sydney CityGrid Project



2.1.1 Physical works undertaken as part of Stage 2D

Stage 2D of the Sydney CityGrid Project was described in detail in Chapter 6 of the Environmental Assessment and involves the following works:

- Construction of the 3.2 km CECT between a site on the corner of Albion Street and Riley Street, Surry Hills, and the City North Zone Substation at the northern end of the CBD, with connections to the proposed City East and existing Dalley Street Zone Substations;
- Extending the existing CSCT by approximately 150 m between the existing Surry Hills shaft at Wade Place, Surry Hills, and the site proposed for the Riley Street STSS on the corner of Albion and Riley Streets, Surry Hills;
- A shaft in Yurong Street Parkway to connect two 33kV feeders from the CECT (Domain Shaft) to the local network; and

- If required, refurbishment of the existing Dalley Street Zone Substation involving replacement of equipment such as switchgear. This would require a shaft in Dalley Street to connect the CECT to the Dalley Street Zone Substation. A new building would not be constructed on or adjacent to the site of the Dalley Street Zone Substation as part of Stage 2D.

Reference should be made to Section 6.2 and 6.3 of the Environmental Assessment for a detailed description of these works which, in summary, involve the following main construction stages:

- Site establishment of the Riley Street compound;
- Tunnel construction process involving detailed surveys, dilapidation survey, shaft excavation, construction of the CSCT, construction of the CECT, groundwater management and tunnel ventilation and dust control;
- Internal refurbishment of the Dalley Street Zone Substation, if required;
- Fitout and commissioning; and
- Ancillary works.

3. Preferred project

3.1 Changes to the project described in the Environmental Assessment

Section 6 of the Environmental Assessment indicated that Dalley Street Zone Substation would be refurbished if required. EnergyAustralia propose to change the project described in the Environmental Assessment as it is no longer proposed to refurbish the existing Dalley Street Zone Substation. As a result, there is no longer a requirement to construct a shaft within Dalley Street to connect the CECT to the substation.

The alignment of the CECT presented in the Environmental Assessment was developed to pass beneath Dalley Street to minimise the length of the shaft connecting the CECT and the Dalley Street Zone Substation. As the connection to Dalley Street Zone Substation is no longer required, the alignment of the CECT has been refined (refer to Figure 3-1). The section of the CECT that is affected by this change is between the intersection of Loftus Street and Bent Street, and the City North Zone Substation. Drawings of this alignment are located in Appendix A.

The project described in the Environmental Assessment involved two feeders directly connecting the City East Zone Substation to the City North Zone Substation, and an additional two feeders connecting the City East Zone Substation to the City North Zone Substation via the Dalley Street Zone Substation. As the connection to the Dalley Street Zone Substation is no longer required, four feeders would connect the City East Zone Substation to the City North Zone Substation.

EnergyAustralia would continue to maintain the existing Dalley Street Zone Substation until it is retired.

The potential environmental impacts associated with this change to the project are discussed in Section 3.2 below.

3.2 Potential environmental impacts

The proposed change to the project would reduce the potential environmental impacts compared to those described in the Environmental Assessment because surface construction activities would no longer be required in the vicinity of the Dalley Street Zone Substation. As a result, the potential impacts associated with issues such as heritage and archaeology, noise and traffic at this location would be avoided.

The following sections summarise changes to the environmental impacts described in the Environmental Assessment and are limited to the portion of the CECT route affected by the change to the alignment.

3.2.1 Noise and vibration

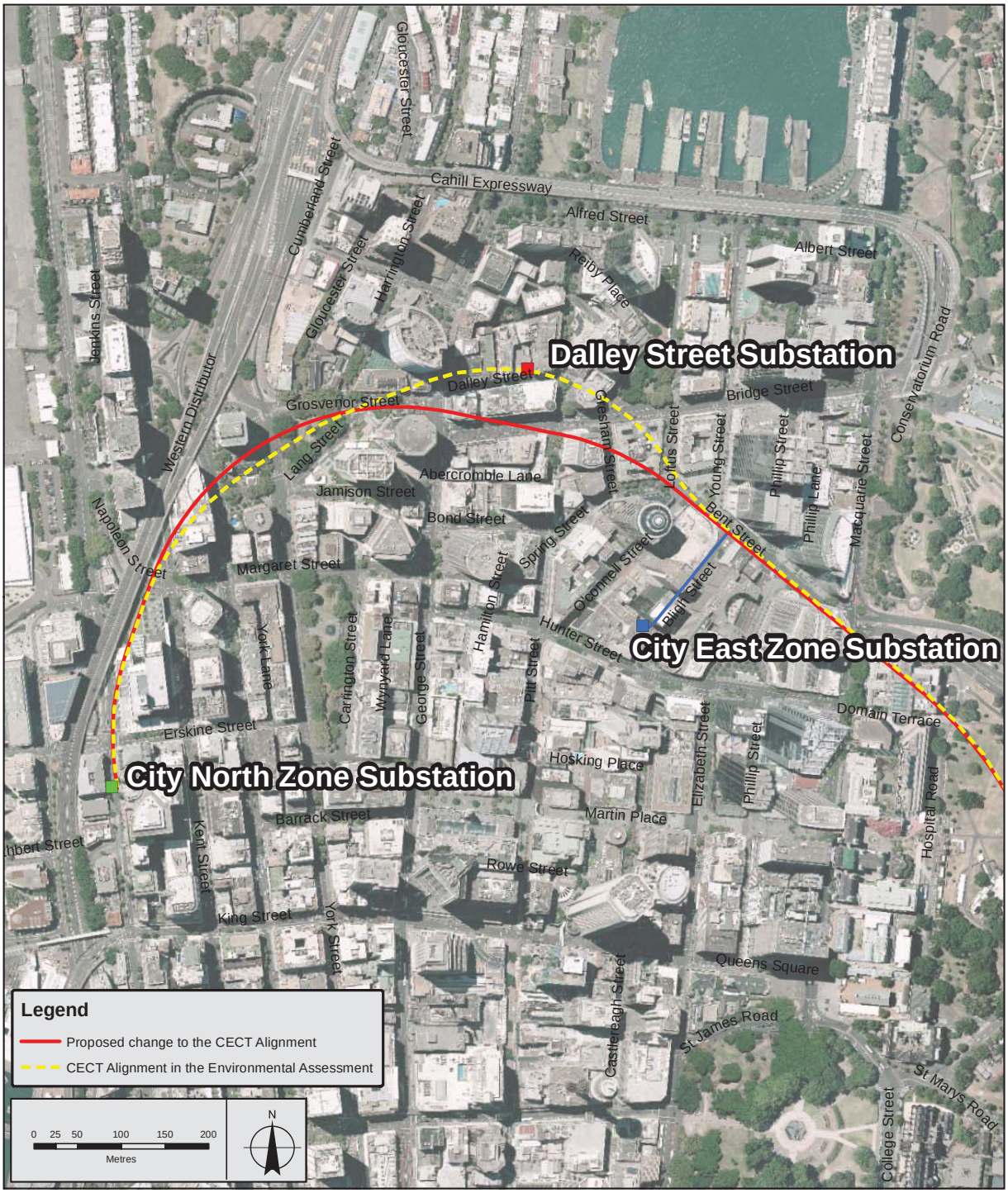
Potential vibration and associated regenerated noise impacts were assessed in the Environmental Assessment and this took into account the distance between the CECT and buildings and underground infrastructure in the vicinity of the alignment. The minimum separation distance between the CECT and underground structures in the vicinity of the section of the CECT affected by the change to the project was approximately 12 m. The noise and vibration assessment concluded that vibration and regenerated noise would comply with criteria developed in accordance with Assessing Vibration: Technical Guideline (DECC 2006) and the Interim Construction Noise Guideline (DECCW, 2009).

The proposed change would result in slightly different noise and vibration impacts to those described in the Environmental Assessment. As the vertical and horizontal alignment has been refined, there have been changes to the distance between the CECT and buildings and underground structures. As a result, the separation distance between the CECT and the nearest buildings and underground structures has reduced by 1 m to 2 m depending on the location. Along the section of the CECT subject to the change in alignment, there is generally 20 m to 30 m separation between the CECT and the nearest underground structures. At the closest point, the CECT is about 11 m from the basement of a building in Kent Street.

As the proposed change would result in the CECT being slightly closer to the nearest buildings and underground structures, there would be a marginal increase in potential vibration and regenerated noise impacts. Given the small change to the vertical alignment and the separation distance between the CECT and the nearest underground structures, it is likely that vibration and regenerated noise would comply with criteria developed in accordance with Assessing Vibration: Technical Guideline (DECC 2006) and the Interim Construction Noise Guideline (DECCW, 2009).

Potential impacts associated with noise and vibration impacts would be managed by implementing the Statement of Commitments.

Figure 3-1 Revised components of the Sydney CityGrid Project



3.2.2 Landowners affected by compulsory acquisition

EnergyAustralia would compulsorily acquire stratum to construct the CECT and the change to the tunnel alignment would alter the properties that would be affected by the compulsory acquisition. One-on-one consultation would be undertaken with landowners that would be affected by compulsory acquisition.

3.2.3 Spoil management

As realignment of the tunnel route would reduce the length of the CECT by approximately 30 m, there would also be a minor reduction in the volume of spoil generated and removed from the tunnel via the Riley Street site.

4. Consideration of issues raised in submissions

4.1 Overview

The Environmental Assessment was exhibited by the Department of Planning from 11 November 2010 – 10 December 2010 and from 15 December 2010 – 21 January 2011. The community and other stakeholders were invited to make submissions to the Department of Planning during this time. A total of 15 submissions were received from 14 parties during the exhibition period.

The main issues raised in the submissions related to noise and vibration impacts associated with the tunnelling works and the potential for vibration to impact on the structural integrity of buildings in the vicinity of the tunnels. Concern was also raised regarding the community consultation for the project, particularly in the vicinity of the proposed Riley Street construction compound.

The following section summarises and addresses issues that were raised in submissions. Detailed responses are not provided to issues relating to the refurbishment of the Dalley Street Zone Substation as approval is no longer sought for these works.

4.2 Heritage Council of NSW

The Heritage Branch noted that the Environmental Assessment assessed the heritage significance of the site and considered impacts the project could have upon nearby heritage items. The Heritage Branch supports the mitigation measures detailed in Sections 10.3 and 11.3 of the Environmental Assessment and recommended that the following conditions be included in any approval for the project.

Archaeological heritage

- Construction of the Dalley Street shaft must be carried out with archaeological input as the site has the potential to contain archaeological remains associated with the history and development of Sydney, including the Tank Stream;
- The site must be inspected by an archaeologist once the existing road surface has been removed and prior to excavation commencing;
- The initial bulk excavation must be monitored so that any buried features can be recognised;
- If construction of the shaft impacts on any archaeological remains, including the Tank Stream, EnergyAustralia must investigate alternative locations for the Dalley Street shaft, giving consideration to existing services and utilities located within the vicinity of the area;
- Any items of archaeological significance or interest must be recorded by an archaeologist and managed in consultation with the Heritage Branch of the Department of Planning; and
- Any evidence of substantial archaeological remains must be investigated and recorded and soil samples taken for analysis.

Built heritage

- Potential indirect impacts on items of built heritage significance due to vibration impacts must be managed in accordance with the mitigation measures detailed in Section 9.4 'Sydney CityGrid Project Environmental Assessment for Stage 2D' dated November 2010;
- Dilapidation surveys must be conducted on buildings in the immediate vicinity of the project site alignment to identify any heritage listed buildings that are structurally unsound; and
- If heritage listed buildings are found to be structurally unsound, consideration must be given to the need to adopt alternative vibration criteria.

Indigenous heritage

- Should any Aboriginal objects be found the Department of Environment, Climate Change and Water (DECCW) must to be informed (as required by the provisions of the *NSW National Parks and Wildlife Act 1974).* All works must cease immediately and not recommence until written authorisation from DECCW is received. The Metropolitan Local Aboriginal Land Council must also be notified.

Response

The project has been refined and it is not longer proposed to refurbish the Dalley Street Zone Substation, meaning that a shaft is no longer required in Dalley Street (refer to Section 3). Based on this, it is no longer considered necessary to include specific commitments or conditions relating to managing potential heritage issues associated with construction of a shaft in Dalley Street or refurbishment of the Dalley Street Zone Substation.

As indicated in Section 4.3.2, DECCW does not support the draft Statement of Commitment in the Environmental Assessment that is consistent with the condition proposed by the Heritage Branch and stated that in the event that Aboriginal objects are found, "all works must cease immediately and not recommence until written authorisation from DECCW is received". The Statement of Commitments has been refined to remove reference to written authorisation being received from DECCW and reflects that DECCW would be notified and consulted to determine the appropriate course of action (refer to Section 5).

The remaining conditions recommended by the Heritage Branch are consistent with the findings of the indigenous and non–indigenous heritage assessments undertaken during preparation of the Environmental Assessment. They are also consistent with the intent of the mitigation measures detailed in Section 10.3 and 11.3 of the Environmental Assessment and the Statement of Commitments. On this basis, EnergyAustralia agrees with the intent of the recommended conditions, however the text would be refined during negotiation of the MCoA with the Department of Planning.

4.3 NSW Department of Environment, Climate Change & Water

DECCW's submission noted that it supports approval of the project, however consideration should be given to their recommended conditions when developing the approval. EnergyAustralia agrees with the intent of the conditions recommended by DECCW, however the final wording would be refined during negotiation of the MCoA with the Department of Planning.

DECCW's recommended conditions are summarised below.

4.3.1 Issue 1 Noise and vibration

DECCW recommended that the following conditions relating to management of noise and vibration be included in the project approval.

1. The proponent must prepare and implement a detailed Construction Noise and Vibration Management Plan that includes but is not necessarily limited to:

    a) Implementing all the construction noise and vibration management measures in Section 8 of the Noise and Vibration Impact Assessment accompanying the Environmental Assessment, and all the commitments in the Draft Statement of Commitments.

    b) Identification of the specific activities that will be carried out and associated noise sources at the premises.

    c) Identification of all potentially affected sensitive receiver premises,

    d) Quantification of the rating background noise level for sensitive receivers, as part of the Construction Noise and Vibration Management Plan, or as undertaken in the Environmental Assessment.

    e) The construction noise, ground-borne noise and vibration objectives outlined in the conditions of approval.

    f) Assessment of potential noise, ground-borne noise and vibration levels from the proposed construction methods expected at sensitive receiver premises against the objectives identified in the conditions of approval.

    g) Where the objectives are predicted to be exceeded, an analysis of feasible and reasonable noise mitigation measures that can be implemented to reduce construction noise impacts.

    h) Description of management methods and procedures, and specific noise mitigation treatments that will be implemented to control noise and vibration during construction.

    i) Where the objectives cannot be met, a sliding scale of additional measures are to be developed and implemented including, but not necessarily limited to the following, which should be considered and implemented where practicable; reduced hours of construction, the provision of respite from noisy vibration intensive activities, an acoustic enclosure over the excavation site, alternative excavation methods or other negotiated outcomes with the affected community.

j) Where it is determined that the works cannot be undertaken in a manner that satisfies the construction noise and vibration objectives, a report justifying that the construction noise and vibration measures (including management measures) consistent with current best practice shall be submitted to the Director-General for approval prior to commencement of works.

k) Procedures for notifying residents of construction activities that are likely to effect their noise and vibration amenity.

l) Measures to monitor noise performance and respond to complaints.

2. All construction work at the premises, other than below ground tunnelling works and noise intensive activities such as rock breaking, may be conducted between 7am and 7pm Monday to Friday and between 7am and 5pm Saturdays and at no time on Sundays and public holidays. Below ground tunnelling works may be conducted 24 hours per day. Noise intensive activities such as rock breaking must be conducted between 9am and 12pm Monday to Saturday and between 2pm and 5pm Monday to Friday and at no time on Sundays and public holidays. Works outside these hours are not permitted except as explicitly specified below or in other conditions and include:

   a) The delivery of materials which is required outside these hours as requested by Police or other authorities for safety reasons.

   b) Emergency work to avoid the loss of lives, damage to property and/or to prevent environmental harm.

   c) Other works expressly approved by the Director-General.

3. The construction noise objective for the project is to manage noise from construction activities (as measured by a $LA_{eq(15minute)}$ descriptor) so it does not exceed the background LA90 noise level by more than 10 dB(A) for works during standard construction hours; and by more than 5 dB(A) for works outside standard construction hours. Background noise levels are those identified in the Environmental Assessment. Any activities that have the potential for noise emissions that exceed the objective must be identified and managed in accordance with the Construction Noise and Vibration Management Plan. The Proponent must implement all feasible and reasonable noise mitigation and management measures with the aim of achieving the construction noise objective. 5dB(A) must be added to the measured construction noise level when comparing the measured noise with the construction noise objective, for those activities listed in Section 4.5 of the Interim Construction Noise Guideline as being particularly annoying for nearby residents.

4. Vibration caused by construction and received at any sensitive receiver outside the proposal must be assessed against the guidelines contained in the DECC publication "Environmental Noise Management - Assessing Vibration: a technical guideline" and in accordance with the Construction Noise and Vibration Management Plan.

5. Regenerated noise from construction works must not exceed the following criteria as measured at the nearest sensitive receptor:

   a) 40 dB(A) between the hours of 6:00 pm and 10:00 pm; and

   b) 35 dB(A) between the hours of 10:00 pm and 7:00 am.

Response

The conditions recommended by DECCW are generally consistent with the intent of the noise and vibration mitigation measures detailed in Section 9.3 of the Environmental Assessment and the Statement of Commitments. On this basis, EnergyAustralia supports the intent of the recommended conditions, however the text would be refined during negotiation of the MCoA with the Department of Planning.

4.3.2 Issue 2 Aboriginal cultural heritage

DECCW noted that recommendation 8.2.3 (c) and (e) of the cultural heritage assessment and 11.3 of the Environmental Assessment both state that if Aboriginal objects are encountered during construction, all work must cease and not recommence until written authority is received from DECCW.

DECCW does not support these statements and recommends that if new, previously unidentified Aboriginal objects are located during the course of the approved works, they are collected, recorded and deposited at the Australia Museum in accordance with standard archaeological practice.

DECCW requested that it must be provided with the opportunity to review and provide written endorsement of any condition of approval or Statement of Commitment that involve DECCW.

Response

The Statement of Commitments has been revised to remove reference to DECCW providing written authority prior to works recommencing. In the event that unexpected Aboriginal objects are encountered during construction, all work likely to affect the object would cease and DECCW would be consulted regarding measures to be implemented to manage the impact. This may involve the object being collected, recorded and deposited at the Australia Museum in accordance with standard archaeological practice.

4.3.3 Issue 3 Groundwater

DECCW recommended the following condition relating to groundwater management:

- The proponent must prepare and implement a Water Quality Management Plan that includes but is not necessarily limited to implementing water quality management measures as outlined in the Environmental Assessment and Draft Statement of Commitments.
- Waters to be discharged via the stormwater system into Sydney Harbour must be managed to ensure compliance with Section 120 of the *Protection of Environment Operations Act 1997* (POEO Act).
- The proponent may require an Environment Protection Licence to cover discharge of waters encountered during tunnelling works. DECCW are the appropriate regulatory authority for EnergyAustralia and as such will impose more specific conditions regarding water quality on the licence.

Response

Section 15.3 of the Environmental Assessment indicates that a Water Quality Sub-plan would be prepared as part of the CEMP in accordance with 'Managing Urban Stormwater: Soils and Construction' (Volume 1, 4th Edition, the 'Blue Book', Landcom, 2004) and would detail specific measures to be implemented to manage soil, surface and groundwater impacts.

The Statement of Commitments reflects that groundwater and surface water discharges during construction and operation would be managed to comply with the requirements of Section 120 of the POEO Act. In the event that discharges would not comply with the requirements of Section 120 of the POEO Act, DECCW would be consulted regarding the need for an environment protection licence under the POEO Act.

4.3.4 Issue 4 Cumulative impacts and coordination

As there are a number of major projects being undertaken within the Sydney CBD, DECCW recommended that EnergyAustralia be required to coordinate planned works in the area to reduce the impacts on both the community and the environment. DECCW recommended the following condition:

Prior to the commencement of construction of the project, the proponent shall develop a Coordinated Construction Environmental Management Protocol. The protocol shall provide a framework for identification of reasonable and feasible opportunities for the coordinated monitoring and management of environmental impacts from the development.

The protocol shall include but not necessarily be limited to:

a) Identifying all EnergyAustralia planned works with proximity to the CityGrid Stage 2D Project.

b) Identifying all planned works to be carried out in the project area through consultation with Sydney City Council and Department of Planning.

c) Identifying and implementing reasonable and feasible opportunities for a coordinated approach to the management of cumulative environmental impacts from the developments, with particular consideration of noise and vibration impacts (this may involve timetabling works to avoid prolonged or excessive noise disturbance).

d) Procedures for access to, and provision of, monitoring data from each development.

e) Arrangements for communication between projects, including designated contact persons and contact details.

f) Notification procedures in the event of an incident at any of these developments that may impact on the other developments or generate significant common or cumulative impacts.

g) Mechanisms for review of the protocol from time to time.

The proponent shall provide a copy of the protocol to the Director-General as soon as practical after agreement on the terms of the protocol.

Response

The Statement of Commitments has been revised to reflect that EnergyAustralia would prepare a Coordinated Construction Environmental Management Protocol that would:

- Identify major projects undertaken by EnergyAustralia in the Sydney CBD that have the potential for cumulative construction impacts with Stage 2D of the Sydney CityGrid Project. This would consider the construction programs for major projects undertaken by EnergyAustralia to determine whether there is the potential for cumulative construction impacts.
- Identify potential cumulative impacts and reasonable and feasible opportunities to implement a coordinated approach to manage potential cumulative impacts from major projects.
- Define procedures for access to, and provision of, monitoring data from each major project.
- Confirm arrangements for communication between those undertaking major projects, including designated contact persons and contact details.
- Define notification procedures in the event of an incident at any of the major projects that may impact on the other projects or generate significant common or cumulative impacts.

4.4 Submission 3 – Community member

4.4.1 Issue 1 Land stability and flooding

This submission was from a landholder that owns a property in the vicinity of the intersection of Riley and Liverpool Streets, Darlinghurst. The landholder raised issues regarding potential construction impacts of the CECT on the foundations of structures in this locality, including the potential for damage to the Bondi Ocean Outfall Sewer and other underground services that may lead to localised flooding. The landholder noted that floods have occurred in the area in the past and believes that these could be attributed to leaks from below ground services.

Response

The project has been designed to minimise potential impacts on the integrity of structures in the vicinity of the alignment. This involved consultation with Sydney Water Corporation (Sydney Water) to identify existing and proposed assets that have the potential to be impacted. Sydney Water reviewed the designs to ensure that appropriate separation is provided between the CECT and the Bondi Ocean Outfall Sewer to minimise the potential for impacts on this structure. The Statement of Commitments reflects that ongoing consultation would be undertaken with Sydney Water during construction of the project.

The Statement of Commitments reflects that dilapidation surveys would be undertaken of certain buildings, services and structures identified by EnergyAustralia's design consultant as being sensitive to vibration and settlement from the project. The Bondi Ocean Outfall Sewer would be subject to a dilapidation survey and any damage attributed to the project would be repaired. In addition, EnergyAustralia would undertake monitoring of certain buildings and structures in close proximity to the works as agreed with the relevant stakeholder. Procedures would be established to avoid or minimise potential impacts to these buildings or structures.

4.5 Submission 4 – Community member

4.5.1 Issue 1 Consultation

This submission was received on 12 December 2010 and stated that there had been a lack of consultation and public advertisement of the project, including the exhibition period for the Environmental Assessment. It requested that the exhibition period be extended and that all residents receive written notice of the project and exhibition and comment periods.

Response

An advertisement was placed in the Sydney Morning Herald on 10 November 2010 advising that the Environmental Assessment would be publicly exhibited between 11 November – 10 December 2010. A letterbox drop was undertaken to distribute newsletters to properties along the alignment of the CECT between 9 – 15 November 2010. The newsletters provided an update on the project and outlined the exhibition period and mechanisms available to make a submission to the Department of Planning.

The newsletters advised that there would be a community display at the Cambridge Hotel which is located in the vicinity of the Riley Street construction compound. The community displays occurred during the exhibition period, on 17 November 2010 between 10 am and 12 pm, and on 18 November between 3 pm and 7 pm.

The exhibition period was extended and a second advertisement was placed in the Sydney Morning Herald on 15 December 2010 advising that it would be on exhibition between 15 December 2010 – 21 January 2011. A letterbox drop was undertaken to distribute newsletters to properties along the alignment of the CECT between 13 – 16 December 2011 to advise of the extension to the exhibition period. The distribution area for the second letterbox drop was expanded beyond that undertaken for the initial exhibition period to encompass a larger number of properties that may potentially be affected by the project.

The issues raised in this submission have been addressed as the extension to the exhibition period has provided additional opportunities for the community to obtain information and make submissions. In addition, a member of the body corporate has distributed copies of both newsletters to the apartment block listed as the residential address for the person that made this submission.

4.6 Submission 5 – Community member

4.6.1 Issue 1 Consultation

This submission was received on 12 December 2010 from a member of the community residing in a property that is in close proximity to the proposed alignment of the CECT in Surry Hills. The submission indicated that the resident:

- Had not been provided with information regarding the project and did not become aware of the project until after the community information session was held at the Cambridge Hotel.
- Could not be directed to information on the project at EnergyAustralia's office at 570 George Street, Sydney.

The submission objected to the environmental and architectural aspects of the project based on information that was available regarding the City North Zone Substation and proposed City East Zone Substation in Bligh Street.

Response

Section 4.5 indicates that the exhibition period for the Environmental Assessment was extended and a second letterbox drop was undertaken to distribute newletters to potentially affected properties in the vicinity of the CECT. The distribution area for the letterbox drop included the address nominated by the member of the public that provided submission 5. A member of the body corporate has distributed copies of both newsletters to the apartment block listed as residential address for the person that made this submission.

The issues raised in this submission have been addressed as the extension to the exhibition period has provided additional opportunities for the community to obtain information and make submissions.

4.6.2 Issue 2 Need for a Community Liaison Group

The resident submitted a second submission on 24 January 2011 that raised issues relating to amenity based impacts. Residents in the vicinity of the Riley Street construction compound would experience construction impacts over a period of approximately four years and the submission requested that the community consultation for the project include formation of a Community Liaison Group. Issues of concern to residents in the vicinity of the site include:

- Truck movements associated with the removal of spoil;
- Dust associated with construction and loading of trucks;
- Construction noise and vibration, 24 hours per day; and
- The removal of parking spaces in Riley Street and the influx of construction personnel.

Response

Section 4.5 of the Environmental Assessment indicates that a Community Liaison Group would be formed for the Riley Street site as this would be the main construction site for the project. The group would contain representatives of local businesses, residents, council and other interested parties. The Statement of Commitments has been revised to specifically refer to formation of this Community Liaison Group.

4.6.3 Issue 3 Appearance of infrastructure at the Riley Street compound following completion of construction

The submission indicated that any buildings on the site, which is in a conservation area, should be designed with care and sensitivity. As the site is comparatively large, it was suggested that there is also an opportunity to give something back to the community.

Response

Section 10.2.2 of the Environmental Assessment indicates that the control room building would be the only above ground structure associated with Stage 2D once construction is complete. This structure would be approximately 15m long, 8m wide and 6m high and would present as a component of the Riley Street STSS that forms part of the Sydney CityGrid Project.

The Riley Street STSS would include above ground structures and the control room building would be incorporated into the overall architectural treatment of the site. The construction program for the STSS would overlap with the Stage 2D construction program such that the control room building would not stand alone without the STSS. Potential impacts associated with construction and operation of this facility would be addressed during preparation of an Environmental Assessment as part of a separate application for approval that would be submitted to the Department of Planning. The community would have an opportunity to comment on the impact of the Riley Street STSS during exhibition of that Environmental Assessment.

The Riley Street site would contain the Riley Street STSS and possibly a future bulk supply point that would be constructed by TransGrid around 2020. As such, it is unlikely that there would be sufficient room to accommodate community uses at the site.

4.7 Submission 6 – Community member

4.7.1 Issue 1 The project should be deferred until after the NSW election

The submission indicated that the project should be placed on hold until after the State election in March 2011 because construction would occur over a number of years and there is debate regarding the ownership of the State electricity network. It stated that in the interim, additional publicity and consultation should be undertaken to inform the community around Riley, Albion and Ann Streets of the project.

Response

The existing electricity supply infrastructure in the Sydney CBD requires refurbishment, replacement and augmentation to provide a secure supply of electricity to the Sydney CBD that complies with new licensing requirements. In order to achieve these requirements in the timeframe required, it is imperative that EnergyAustralia begin works on this project in a timely and efficient manner. As the project is needed to ensure long term electricity needs of the CBD are met, it is not proposed to delay the project until after the State election.

Section 4.6 indicates that the exhibition period for the Environmental Assessment was extended and a second letterbox drop was undertaken to distribute newsletters to potentially affected properties in the vicinity of the CECT. The distribution area for the letterbox drop included the address nominated by the member of the public that provided submission 6.

The issues raised in this submission have been addressed as the extension to the exhibition period has provided additional opportunities for the community to obtain information and make submissions.

4.7.2 Issue 2 Details regarding the appearance of the Riley Street site following completion of construction

The submission indicated that detail should be provided regarding the appearance of the above ground structures at the Riley Street compound following completion of the project to determine the impact on the viability and value of adjacent properties.

The submission understood that there may be provision for private dwellings at the site.

The submission raised questions regarding:

- What the existing excavated areas of the site would be used for.
- Whether there are to be public or other garages, or additional below ground EnergyAustralia works at the site.

Response

The issue relating to the appearance of the Riley Street STSS is addressed in Section 4.6.3.

EnergyAustralia does not propose to utilise the site of the Riley Street compound for private dwellings following completion of construction. The site would be occupied by the Riley Street STSS and potentially the bulk supply point that may be constructed by TransGrid.

The existing excavated areas of the site would be developed as part of basement levels for either Stage 2D or the Riley Street STSS. It is not proposed to provide public or other garages at the site.

4.8 Submission 7 - Allianz Australia Insurance Limited

Allianz Australia Insurance Limited (Allianz) are the owners of 55 Clarence Street Sydney, known as the "Powertel" building located on the north-west corner of the intersection of Clarence and Margaret Streets. Allianz raised issues regarding the impact of the project on this building.

4.8.1 Issue 1 Noise and vibration during construction

Allianz made the following comments regarding the potential impacts of noise and vibration associated with the project:

- The vibration levels during construction should be kept within the DECC guidelines for offices.
- A noise and vibration management plan, including the location of monitoring points, should be agreed prior to commencement of the construction of the CECT.
- A maximum allowable noise and vibration/acceleration level should be agreed with EnergyAustralia.
- A dilapidation survey should be prepared which would allow damage to structure and finishes to be determined.

Response

Potential impacts of the project on the Powertel building were considered during development of the design. This involved minimising potential vibration impacts by ensuring that adequate separation distance was maintained between the CECT and below ground structures that form part of this building. Investigations undertaken as part of the Environmental Assessment concluded that as the separation of the building to the CECT would be approximately 32 m, vibration levels would comply with the DECC guideline, *Assessing Vibration: a Technical Guideline*.

The issues raised by Allianz have been addressed by the Statement of Commitments which reflects that the construction noise and vibration management plan would:

- Identify construction noise, regenerated noise and vibration objectives.
- Detail measures to monitor compliance with the noise and vibration objectives.

The Statement of Commitments also reflects that dilapidation surveys would be undertaken of certain buildings, services and structures identified by EnergyAustralia's design consultant as being sensitive to vibration and settlement from the project. Any damage attributed to the project would be repaired by EnergyAustralia.

4.8.2 Issue 2 Stress relief in rock and settlement

A geotechnical investigation should be carried out with modelling to predict ground movements.

Response

Development of the design took into account the results of detailed geotechnical investigations undertaken for the project by Pells Sullivan Meynink (2008, 2009). The tunnels have been designed to be constructed with pre-cast concrete segments installed immediately behind the boring machine to minimise the potential for settlement. Preliminary modelling indicated that predicted ground movements would be

within acceptable ranges along the alignment. Detailed design of the lining is currently being completed, however settlement is considered unlikely to impact on the structural integrity of the Powertel building given the separation distance of 32 m.

The Statement of Commitments also reflects that dilapidation surveys would be undertaken of certain buildings, services and structures identified by EnergyAustralia's design consultant as being sensitive to vibration and settlement from the project. Any damage attributed to the project would be repaired by EnergyAustralia.

4.8.3 Issue 3 Effect of water table

As the tunnel would be fully lined, it is unlikely to have a long term effect on the building. There is the potential for lowering of the water table during construction if there are defects in the rock. This construction risk should be assessed during the detailed geotechnical investigation as this may have an effect on settlement.

Response

The effect of dewatering during construction was considered during development of the design and this referred to the results of the geotechnical investigations. Settlement of buildings due to groundwater drawdown typically only occurs if the water table is within the soil horizon and the buildings are founded within this soil horizon prior to the water table being drawn down. As the geotechnical investigations indicate that the water table is likely to be in bedrock in the vicinity of the Powertel building, and the Powertel building is founded in rock, it is considered unlikely that temporary drawdown of the water table during construction would result in settlement impacts on the building.

4.8.4 Issue 4 Electromagnetic radiation and corrosion

The potential for corrosion of structural elements such as reinforcement in the building foundations should be considered. This assessment should include readings of the current situation as well as readings when the tunnel is operational, and maximum radiation levels should be agreed.

Response

Development of the design took into account the issue of steel corrosion through 'stray currents'. The electrical feeder cables are arranged in a trefoil formation which minimise the electromagnetic field. Additionally, the concrete lining would be constructed with steel fibre reinforcement rather than conventional steel bar reinforcement which prevents electric current being conducted. Given these design features and the separation distance of approximately 32 m, it is considered unlikely that the project would cause corrosion of the steel reinforcement in the Powertel building foundations.

4.8.5 Issue 5 Project information and consultation

Allianz believes that there is inadequate information provided to assess the nature and significance of the potential adverse impacts on 55 Clarence Street. It is unclear whether there will be any detailed investigations and assessments on properties such as 55 Clarence Street and it was recommended that EnergyAustralia consult directly with Allianz to further develop appropriate mitigation measures.

Response

Development of the design took into account the characteristics of existing buildings in the immediate vicinity of the project. As indicated in the Statement of Commitments, a dilapidation survey would be undertaken on certain buildings, services and structures identified by EnergyAustralia's design consultant as being sensitive to vibration and settlement from the project. Any damage attributed to the project would be repaired by EnergyAustralia.

It is considered unlikely that there would be any adverse impact on the Powertel building given the 32m separation distance between this building and the CECT.

4.9 Submission 8 – Chairperson, Executive Committee of Owners Corporation, SP42813 Chelsea Court, 300 Riley Street

4.9.1 Issue 1 Consultation

This submission was received on December 11, 2010 and indicated that there has been insufficient consultation associated with the project, that residents have not been informed of the project, and that the period in which to make submissions was minimal.

Response

These issues are addressed in Section 4.5.

4.10 Submission 9 – City of Sydney

The City of Sydney raised no objection to the project subject to adoption of a number of considerations and recommended conditions.

The City of Sydney made reference to previous correspondence as part of their submission for the Concept Application dated 12 February 2009 and noted that the recommendations and conditions requested in that correspondence are also applicable to Stage 2D of the Sydney CityGrid Project. The conditions and recommendations detailed in the previous correspondence were addressed in the "Sydney CityGrid Project Submissions Response and Preferred Project Report" May 2009.

4.10.1 Issue 1 Heritage and archaeology

The City of Sydney raised concerns over the impact:

- Upon potential non-indigenous archaeological deposits, particularly the surface impact at Dalley Street;
- Of construction upon potential sites of Aboriginal cultural significance; and
- Of settlement and vibration due to tunnelling beneath heritage items, Heritage Conservation Areas and Heritage Streetscapes.

The City of Sydney made the following recommendations:

- Construction of the Dalley Street shaft should be carried out with archaeological input;
- The approval should require management of Aboriginal archaeology through mitigation measures to manage potential impacts on items of Aboriginal cultural significance;
- Dilapidation survey of the 57 heritage items in the immediate vicinity of the route alignment zone should be undertaken prior to the commencement of works. These should identify any buildings that are structurally unsound;
- A noise and vibration management plan should be developed to include measures to minimise impacts;
- If heritage buildings are found to be structurally unsound, consideration would be given to the need to adopt alternative vibration criteria and to undertake full photographic recording prior to commencement of works; and
- Management of groundwater during excavation and tunnelling works is critical to avoid settlement.

Response

EnergyAustralia has modified the project and a shaft is no longer proposed to be constructed in Dalley Street (refer to Section 3.1). As a result, there is no longer the potential for archaeological deposits to be encountered at this location during construction of the project.

Section 11.3 of the Environmental Assessment outlines mitigation measures which would be included in the CEMP to manage potential impacts on items of Aboriginal heritage significance. These measures are consistent with those proposed by the City of Sydney.

Dilapidation surveys would be conducted on certain buildings in the immediate vicinity of the alignment that EnergyAustralia's engineering design consultants identify as having potential to be affected. Consideration would be given to the need to adopt alternative vibration criteria if heritage listed buildings are identified as structurally unsound.

The Statement of Commitments reflects that a noise and vibration management plan would be prepared as part of the Construction Environmental Management Plan for the project. This plan would detail mitigation, monitoring and community liaison measures.

Section 15.3 of the Environmental Assessment provides details on the proposed Water Quality Management Sub-Plan which would be prepared as part of the CEMP for the project. The CEMP would detail specific measures to be implemented to manage soil, surface and groundwater impacts during construction including those to minimise settlement during excavation and tunnelling.

4.10.2 Issue 2 Traffic

The City of Sydney raised the following issues related to traffic and access:

- Site specific Traffic Management Plans must be prepared and submitted to Council for approval;
- Any changes to traffic arrangements along Dalley Street will require Council approval; and
- Changes to traffic directions and parking along Dalley Street will need to be addressed to Council's satisfaction.

Response

The Construction Traffic Management Plan would form part of the CEMP submitted to the Director-General for approval. As such, the City of Sydney would not approve the Construction Traffic Management Plans, however these would be prepared in consultation with the RTA and City of Sydney as outlined in the Statement of Commitments.

As discussed in Chapter 3, the project has been modified to remove the Dalley Street shaft and the CECT route has been refined (refer to Figure 3 1). As a result, changes to the traffic arrangements in Dalley Street would not be required.

4.10.3 Issue 3 Noise and vibration impact assessment

The City of Sydney agrees with the construction hours for noise intensive activities that are proposed in the Environmental Assessment. As the exact details of plant and equipment have not yet been determined, it was recommended that the following criteria are referred to for project design/selection criteria:

Noise – mechanical plant and equipment

Noise associated with the use of mechanical plant and equipment must not give rise to any one or more of the following:

a) Transmission of "offensive noise" as defined in the Protection of the Environment and Operations Act 1997 to any affected receiver.

b) A sound pressure level at the boundary of any affected receiver that exceeds the background ($LA_{90,\ 15minutes}$) noise level by more than 5dB. The background noise level must be measured in the absence of noise emitted from the use in accordance with Australian Standard AS1055.

Response

The Statement of Commitments reflects that the Noise and Vibration Management Plan prepared as part of the CEMP and would include:

- The construction noise goal, calculated in accordance with the Interim Construction Noise Guideline.
- The vibration goal calculated in accordance with Assessing Vibration; Technical Guidelines.

The Noise and Vibration Management Plan would also include measures to monitor compliance with these goals.

4.10.4 Issue 4 Construction and noise management

The City of Sydney recommended that EnergyAustralia provide the following information to Council for approval prior to determination.

- Selection and maintenance of all mechanical plant in relation to the acoustic output of such plant.
- Details on how and when predicted noise levels are to be verified and objective actions that would trigger review of plant selection, work strategies, acoustic treatments and noise levels.
- A detailed community consultation plan that should include but not be limited to the following:
  - Noise monitoring techniques and method of reporting results to the community.
  - Details of work schedules for all work phases.
  - Review process during works.
  - Site induction details for all employees and contractors.
  - Formal complaint management system.
  - Community involvement plan.

Response

The Statement of Commitments requires preparation of a Noise and Vibration Management Plan as part of the CEMP and this would include information similar to that requested by the City of Sydney. As the project is subject to approval under Part 3A of the EP&A Act, the CEMP would be approved by the Department of Planning prior to commencement of construction.

4.10.5 Issue 5 Tree removal

The City of Sydney advised that the site for the Riley Street compound has the potential to affect and/or require the removal of street trees surrounding the site and that there is no indication within the Environmental Assessment as to whether EnergyAustralia intend to retain or remove these trees.

It was noted that a number of trees have established within the Riley Street site and that these are not considered to be a constraint to development.

The City of Sydney made the following recommendations:

- Any proposed tree removal is to be clearly detailed within appropriate plans and that the City of Sydney is advised of any proposed tree removal at the earliest opportunity.
- The applicant is required to notify the community at the earliest opportunity of any proposal to remove street trees.

Response

The need to remove street trees around the Riley Street site would depend on the configuration of the site proposed by the contractor. The Statement of Commitment requires that the contractor implement reasonable and feasible measures to refine the construction method to minimise the number of street trees to be removed. Any trees removed would be replaced with advanced stock and the species would be selected in consultation with the City of Sydney Council.

Once the contractor has confirmed whether street trees would need to be removed, Council and the community would be notified.

4.10.6 Issue 6 Public domain

The City of Sydney noted that the proposal may potentially affect the public domain where the new shafts are proposed and requested that EnergyAustralia obtain approval from Council's Public Domain Unit prior to the commencement of works to ensure the public way is reinstated to Council's satisfaction.

Response

The project would require excavation of shafts in Little Albion Street and Yurong Street Parkway which form part of the public domain. Dilapidation surveys would be undertaken on certain buildings, services and structures identified by EnergyAustralia's design consultant as being sensitive to vibration and settlement from the project. Any damage attributed to the project would be repaired by EnergyAustralia.

The City of Sydney would be consulted and provided with copies of the dilapidation reports and this would involve ensuring that any rectification works are undertaken to Council's satisfaction.

4.10.7 Recommended development conditions

The City of Sydney provided text for conditions that were requested to be included in the approval. The requested conditions are summarised below. The intent of the majority of the requested conditions is acceptable and similar requirements have been included in the Statement of Commitments, however EnergyAustralia would negotiate the specific wording of the MCoA with the Department of Planning.

Noise management plan – construction sites and demolition, excavation and construction

The requested conditions outlined information that should be included in a construction noise and vibration management plan, which should be submitted to Council for approval.

Response

The Statement of Commitments indicates that a Noise and Vibration Management Plan would be included in the CEMP and would include information similar to that requested by the City of Sydney. As such, it is considered that the intent of the condition requested by the City of Sydney has been addressed by the Statement of Commitments. As the project is subject to approval under Part 3A of the EP&A Act, the CEMP would be submitted to the Department of Planning for approval prior to commencement of construction.

Traffic

It was requested that a condition be imposed relating to a range of traffic issues, including the preparation of site specific traffic management plans, to ensure that potential impacts are appropriately managed during construction of the project.

Response

The intent of this condition is addressed in the Statement of Commitments which reflects that a construction Traffic Management Plan would be prepared in consultation with RTA and the City of Sydney as part of the CEMP. This plan would include measures to manage potential impacts on the traffic and transport network and would consider the issues raised in the City of Sydney's submission.

Erosion and sediment control

The City of Sydney requested that a condition be imposed relating to the need to prepare an Erosion and Sediment Control Plan which must be approved by a Principal Certifying Authority prior to the commencement of demolition/excavation/construction.

Response

The Statement of Commitment requires preparation of a Water Quality Management Sub-Plan prepared in accordance with 'Managing Urban Stormwater: Soils and Construction' (Volume 1, 4th Edition, the 'Blue Book', Landcom, 2004). This would address the intent of the requested condition by detailing specific measures to be implemented to manage soil, surface and groundwater impacts as part of the CEMP. The CEMP would be submitted to the Department of Planning for approval.

Mechanical ventilation

This condition requests that the premises be ventilated in accordance with the Building Code of Australia and Australian Standard AS1668.1-1998 and 1668.2-1991. Details of the mechanical ventilation system are to be submitted to the Principal Certifying Authority prior to the issue of a Construction Certificate.

Response

The project has been designed to ensure that it is ventilated in accordance with the Building Code of Australia which under Part F4 requires ventilation for occupied spaces using outdoor air. In the tunnel this is achieved using ventilation fans.

Australian Standard 1668.1 is not applicable to the project.

Australian Standard 1668.2 relates to ventilation in buildings and associated acceptable indoor air quality. There are no similar spaces to the tunnel in this standard, however the design has been developed to achieve tunnel ventilation rates that exceed rates defined in the standard to maintain air quality for personnel.

The project does not require certification by a Principal Certifying Authority or a Construction Certificate due to the application of Section 75S of the EP&A Act.

Alignment levels

The City of Sydney requested that footpath alignment levels for the building be submitted to Council for approval prior to the issue of a Construction Certificate.

Response

The project is subject to the provisions of Part 3A of the EP&A Act and requires approval by the Minister for Planning. Footpath alignment levels for the building at the Riley Street site would be refined as part of the detailed design process for the site for the STSS and would be subject to a separate approval from the Minister for Planning. The intention would be to comply with the City of Sydney's design requirements for footpath levels.

The project does not require certification by a Principal Certifying Authority or a Construction Certificate due to the application of Section 75S of the EP&A Act.

Public domain plan

This requested condition detailed the requirement to prepare and submit a Public Domain Plan and a Public Domain Works Guarantee deposit.

Response

Impacts on the public domain would be limited to construction of the shafts in Little Albion Street, Yurong Street Parkway, and in the vicinity of the Riley Street site. The Statement of Commitments reflects that dilapidation surveys would be undertaken on certain buildings, services and structures identified by EnergyAustralia's design consultant as being sensitive to vibration and settlement from the project. Any damage attributed to the project would be repaired by EnergyAustralia. This would involve restoring the surface of the public domain to the pre-existing condition.

As a State Owned Corporation, EnergyAustralia does not propose to provide a domain works guarantee deposit. The intent of the requested conditions relating to bank guarantees would be achieved by including a condition in the MCoA that would be prepared in consultation with the Department of Planning. This condition would require that any damage to public areas attributed to the project be repaired by EnergyAustralia as part of the project.

Demolition, excavation and construction management

This requested condition related to the details required to be submitted to and approved by the Principal Certifying Authority prior to the commencement of demolition and/or excavation. It included preparation of work method statements for activities such as demolition and excavation.

Response

A CEMP would be prepared and submitted to the Department of Planning for approval prior to the commencement of construction. The CEMP would include information such as that requested by the City of Sydney and would provide details regarding the work methods to be implemented during activities such as demolition and excavation. A range of subplans would form part of the CEMP and would detail measures to manage issues such as noise and vibration, traffic, water quality, air emissions, and heritage impacts.

Dilapidation report – major excavation/demolition

This requested condition stated that, subject to receipt of permission from the affected landowner, dilapidation reports should be prepared prior to and following demolition/excavation works. The reports should include photographs and a copy of the report should be provided to the affected landowner.

Response

As outlined in the Statement of Commitments (Chapter 5), dilapidation surveys would be undertaken on certain buildings identified by EnergyAustralia's engineering designers as being potentially sensitive to vibration or settlement. The surveys would occur prior to and following construction. The reports would include photographs and copies would be provided to the affected landowners and damage attributed to the project would be repaired by EnergyAustralia.

Road opening permit

The City of Sydney requested a condition which outlines the requirement for a separate Road Opening Permit under Section 138 of the Roads Act 1993 to be obtained from Council prior to the commencement of any:

- Excavation in or disturbance of a public way; or
- Excavation on land that, if shoring were not provided, may disturb the surface of a public road (including footpath).

Response

As EnergyAustralia is a public authority, consent is not required under Section 138 of the Roads Act 1993 to undertake works within Council controlled roads. The Statement of Commitments reflects that Council would be consulted during preparation of the Traffic Management Plan and this would involve consideration of the issues relating to works in road reserves.

Temporary ground anchors, temporary shoring and permanent basement/retaining walls affecting the road reserve

The City of Sydney indicated that for temporary shoring, a separate application under Section 138 of the Roads Act 1993 must be lodged with Council.

It was requested that a number of reports and investigations be submitted including:

- A dilapidation report of adjoining structures and investigation of public utility services to the Certifying Authority and Council prior to the issue of a Construction Certificate.
- Evidence of a $10 million public liability insurance policy indemnifying the City of Sydney and a Bank Guarantee in accordance with the Council's fees and charges, if works are adjoining a Public Way.
- Survey of utility services and submission and approval of certified structural drawings and a geotechnical report to the Principal Certifying Authority and Council.
- Prior to issue of the Occupation Certificate, the Principal Certifying Authority must receive written and photographic confirmation that the restoration of the public way has been complete.
- The Bank Guarantee may be released after the Principal Certifying Authority submits certification to Council that all works as requested have been completed and that there is no remaining instability, damage or unevenness to the public domain as a result of the development.

Response

As EnergyAustralia is a public authority, consent is not required under Section 138 of the *Roads Act 1993* to undertake works within an unclassified road.

As indicated in the Statement of Commitments, dilapidation surveys would be undertaken on certain buildings identified by EnergyAustralia's engineering designers as being potentially sensitive to vibration or settlement. The surveys would occur prior to and following construction. Damage attributed to the project would be rectified at EnergyAustralia's expense.

The Statement of Commitments reflects that investigations would be undertaken to identify services and utilities that may potentially be affected and determine requirements for diversion, protection, or support.

As a State Owned Corporation, EnergyAustralia does not propose to provide a Public Way bank guarantee. The intent of the requested conditions relating to bank guarantees would be achieved by including a condition in the MCoA that would be prepared in consultation with the Department of Planning. This condition would require that any damage to public areas attributed to the project is repaired by EnergyAustralia as part of the project.

The project does not require certification by a Principal Certifying Authority due to the application of Section 75S of the EP&A Act.

Hoardings and scaffolding on a public space

The requested condition related to the requirements for hoarding and the removal of street furniture in public spaces, including the application under Section 138 of the *Roads Act 1993* to erect hoarding and/or scaffolding in a public place.

Response

Hoardings would be erected within the road reserves of Little Albion Street and Yurong Street Parkway to allow construction of shafts in these locations. Hoardings would also be installed along the frontages of the Riley Street construction compound to Riley Street and Albion Street.

As EnergyAustralia is a public authority, consent is not required under Section 138 of the *Roads Act 1993* to undertake works within an unclassified road.

Construction and operation of Stage 2D works would not impact upon any street furniture and hoardings would not obstruct the operation of Council's CCTV cameras.

The Statement of Commitments reflects that Council would be consulted during preparation of the Traffic Management Plan and this would involve consideration of the issues relating to the impact of hoardings and scaffolding on public space.

Barricade permit

The City of Sydney requested that construction/building works using public place, including a road or footpath, obtain approval under Section 138 of the *Roads Act 1993* for a Barricade Permit from Council prior to the commencement of work. Details of the barricade construction, area of enclosure and period of work would be required to be submitted to the satisfaction of Council.

Response

As EnergyAustralia is a public authority, consent is not required under Section 138 of the *Roads Act 1993* to undertake works within an unclassified road. The Statement of Commitments reflects that the Traffic Management Plan would be prepared in consultation with Council and this would involve providing details of any areas enclosed by barricades and the duration the barricades would be in place.

Utility services

This requested condition relates to a number of requirements to ensure that utility authorities are advised of the project including:

- Prior to the issue of a Construction Certificate, a survey is to be carried out of all utility services within and adjacent to the site, including relevant information from utility authorities and excavation if necessary, to determine the position and level of services.
- Prior to the commencement of work, the applicant is to obtain written approval from the utility authorities (e.g. Sydney Water and telecommunications carriers) in connection with the relocation and/or adjustment of the services affected by the construction of the underground structure. Any costs in the relocation, adjustment or support of services are to be the responsibility of the developer.

Response

The Statement of Commitments reflects that services potentially affected by construction activities would be identified to determine requirements for diversion, protection and support.

A dilapidation survey would be undertaken of certain buildings and services identified by EnergyAustralia's engineering designers as being potentially sensitive to vibration or settlement. The surveys would occur prior to and following construction. Any damage attributable to the project would be repaired at EnergyAustralia's expense. Should relocation and/or adjustment of services be required as part of the works, this would be carried out at EnergyAustralia's expense.

Site notice of projects details and approvals

The City of Sydney requested a condition requiring a site notice to be prominently displayed at the boundary to each frontage of the site for the purposes of informing the public of appropriate project details and relevant approvals.

Response

Signage would be provided at construction sites that would provide details of the project, including:

- Overview of the project.
- A community hotline telephone number.
- Outline of works undertaken at the site, including the expected duration.
- A contact point to obtain further information.

Covering loads

This requested condition related to a number of requirements associated with covering, loading and unloading of vehicles during construction.

Response

The intent of this requested condition has been addressed by the Statement of Commitments (Chapter 5) which requires that all loaded trucks carrying material be covered at all times. Where practicable all loading and unloading would be undertaken on the construction site. In instances that these activities are required to be undertaken on the public roadway or reserve, EnergyAustralia would liaise with the City of Sydney to discuss any approvals that may be required, including the requirement for work zones to be established.

Obstruction of public way

The City of Sydney requested a condition that the public way must not be obstructed by any materials, vehicles, refuse, skips or the like, under any circumstances. Non–compliance with this requirement would result in the issue of a notice by Council to stop all work on site.

Response

The CEMP would detail measures that would be implemented to ensure that obstructions to the public way beyond the extent of the construction compounds are minimised. The Statement of Commitments reflects that Council would be consulted during preparation of the Traffic Management Plan and this would involve discussion of measures to minimise the impact of obstructions to the public way.

Use of mobile cranes

This requested condition relates to the operation of mobile cranes, specifically:

- Mobile cranes operating from the road must not be used as a method of demolishing or constructing a building.
- For special operations including the delivery of materials, hoisting of plant and equipment and erection and dismantling of on site tower cranes which warrant the on–street use of mobile cranes, permits must be obtained from Council for the use of a mobile crane. The permits must be obtained 48 hours beforehand for partial road closures which, in the opinion of Council, would create minimal traffic disruptions and four weeks beforehand in the case of full road closures and partial road closures which, in the opinion of Council, will create significant traffic disruptions.
- Special operations and the use of mobile cranes must comply with the approved hours of construction. Mobile cranes must not be delivered to the site prior to 7.30 am without the prior approval of Council.

Response

The need for mobile cranes to be used that may operate from roadways would be determined by the contractor during construction planning and documented in the CEMP. Council would be consulted regarding the need for approvals for operation of mobile cranes.

The Statement of Commitments reflects that Council would be consulted during preparation of the Traffic Management Plan and this would involve consideration of the issues associated with the use of mobile cranes, if required.

Access driveways

Approved driveways are to be constructed for all vehicular access to the construction site in accordance with the requirements of Council's "Driveway Specifications" to the satisfaction of Council.

Response

The entrance and egress points to the Riley Street construction compound would be determined by the contractor during construction planning and would be detailed in the CEMP. The CEMP would include a Traffic Management Plan that would be prepared in consultation with Council and the RTA, and development of this plan would involve consideration of issues such as Council's Driveway Specifications.

Street trees

The City of Sydney requested a condition relating to the retention and removal of trees at the site for the proposed Riley Street Substation, the protection of trees from scaffolding and hoardings, the pruning of trees and the site supervision and reporting on the health and structure of trees.

Response

The Statement of Commitments (Chapter 5) states that the contractor would implement reasonable and feasible measures to refine the construction method to minimise the number of street trees to be removed. Any trees removed would be replaced with advanced stock and the species would be selected in consultation with the City of Sydney Council.

The CEMP would detail measures that would be implemented to manage potential impacts on street trees, including the establishment of tree protection zones, procedures to be followed if street trees are to be trimmed or removed, and restriction of certain activities within tree protection zones. The Statement of Commitments reflects that the City of Sydney would be consulted regarding measures to minimise impacts on street trees.

Reinstatement of the public domain

This condition requires that upon completion of works within any part of the public way, the formation of the carriageway and/or footway is to be reinstated and restored in accordance with the requirements and to the satisfaction of Council.

Response

The Statement of Commitments addresses the intent of this requested condition. Dilapidation surveys would be undertaken and any damage attributed to the project would be repaired.

4.11 Submission 10 – NSW Office of Water

4.11.1 Issue 1 Groundwater

NSW Office of Water advised that more detailed project information must be provided, including pumping volumes, flow rates and water quality, to determine whether a licence is required under Part 5 of the *Water Act 1912.*

It was also noted that Section 15.3 of the Environmental Assessment makes reference to a groundwater sampling plan. The NSW Office of Water requested that it be provided with a copy of the sampling plan and results.

Response

As outlined in Section 15.3 of the Environmental Assessment, a Water Quality Sub-Plan would be prepared as part of the CEMP. The Statement of Commitments relating to this Sub-Plan has been amended to reflect that it would include the following information requested by NOW:

- The extent of dewatering, estimated pumping volumes, flow rates and water quality would be provided to enable NOW to determine whether a licence is required under Part 5 of the *Water Act 1912.*
- The groundwater sampling plan and results would be provided to NOW.

It is considered that these amendments to the Statement of Commitments address the intent of NOW's submission.

4.11.2 Statement of Commitments

NSW Office of Water requested it be provided with a copy of the Water Quality Management Sub-Plan and results, regardless of whether or not a licence is required under Part 5 of the *Water Act 1912.* It was recommended that the Statement of Commitments be revised to reflect this request.

Response

This issue has been addressed by revising the Statement of Commitments to reflect that NOW would be provided with a copy of the Water Quality Management Sub-Plan and results.

4.12 Submission 11 – Community member

4.12.1 Issue 1 Tunnel route

The submission objected to the CECT route as it would pass beneath a number of terraces between Liverpool and William Streets, Darlinghurst. Concern was raised over potential impacts on the structural integrity of the dwellings due to vibration from the tunnel boring machine. The submission requested that the route be realigned to pass beneath Oxford Street and College Street.

Response

The alignment between Liverpool and William Streets passes beneath Yurong Street and avoids the terraces referred to in this submission.

The vertical and horizontal alignments of the CECT were selected following evaluation of a range of issues including geotechnical conditions, existing and proposed underground infrastructure, construction methodology, construction risk and cost, connection points to the existing electricity network, and potential environmental impacts. The selected alignment was adopted following an extensive option evaluation process and is considered to be an optimal balance given the constraints.

The CECT would be constructed using a tunnel boring machine with a diameter of about 4m. The tunnel boring machine would not be able to perform the tight turns at the intersections of Oxford Street with Riley Street and College Street that would be required to achieve the alignment suggested in this submission.

A construction Noise and Vibration Management Plan would be prepared and include measures to monitor vibration impacts.

4.12.2 Issue 2 Structural damage and guarantee

The submission requested a written guarantee that any structural damage to the property resulting from the tunnelling works would be repaired by EnergyAustralia, at no cost to the home owner. It was requested that a structural engineer from EnergyAustralia prepare a report, including pictures, on the property prior to the commencement of works, noting the current state of the property.

Response

As detailed in the Statement of Commitments, EnergyAustralia would conduct dilapidation surveys on certain buildings, services and structures identified by EnergyAustralia's engineering designers as being potentially sensitive to vibration or settlement. The surveys would occur prior to and following construction to allow an assessment to be made of any impacts on structures that are attributed to the project. Any damage attributed to the project would be prepared at EnergyAustralia's expense.

As the CECT alignment passes approximately 90m west of the property referred to in this submission and would be 23m below the surface, EnergyAustralia does not intend to undertake a structural assessment or dilapidation survey of this property.

4.12.3 Issue 3 Water and sewage infrastructure

The submission noted that water and sewerage infrastructure in the vicinity of Liverpool Street and William Street was installed in the 1860s and surface and underground leaks are occurring more frequently. Potential vibration impacts on this infrastructure should be considered.

Response

Section 4.2.4 of the Environmental Assessment indicates that the design of the CECT was developed in consultation with Sydney Water. This involved ensuring that appropriate separation distances are provided between the CECT and existing and proposed water, sewer and stormwater infrastructure. Ongoing consultation would be undertaken with Sydney Water during the design process and this would involve providing drawings identifying the location of known services and utilities relative to the excavations to be undertaken for the project.

A monitoring program would be established in consultation with Sydney Water to monitor specific infrastructure such as the Bondi Ocean Outfall Sewer during construction. This would identify any impacts and allow mitigation measures to be implemented if required.

As outlined in the Statement of Commitments (refer to Chapter 5), dilapidation surveys would be undertaken on certain utilities surrounding the works identified by EnergyAustralia's engineering designers as being potentially sensitive to vibration or settlement. The surveys would occur prior to and following construction to identify and repair any damage attributed to the project.

4.13 Submission 12 – RailCorp

RailCorp's submission noted that, while the project has the potential to impact on existing and future RailCorp tunnels and infrastructure, these could be mitigated via EnergyAustralia entering into an agreement/deed with RailCorp or via conditions of consent.

4.13.1 Issue 1 Existing rail assets

RailCorp requested that the following changes be made to the draft Statement of Commitments regarding the detailed design investigations:

- Additional geotechnical investigations to be undertaken should to be done in accordance with Railcorp Geotechnical Structural and Construction Methodology reporting requirements.
- Detailed design is to be endorsed by RailCorp (and not purely consulted with) for any part of the proposal that is within 25m of an existing rail tunnel or infrastructure.
- The commitment should be expanded to reflect that stakeholder agreements would be developed for works undertaken within 25m of existing RailCorp assets.

RailCorp also recommended that EnergyAustralia enter into the agreement when works start as opposed to when works reach RailCorp's assets, to ensure that there is enough time to negotiate and enter into an agreement. RailCorp believe this would assist in ensuring there are no delays in works progressing while the agreement is negotiated. RailCorp advised that this agreement is to include the items outlined in previous correspondence dated 12 May 2008.

Response

Geotechnical investigations for Stage 2D are complete and the description and classification of soils and rocks in the borehole logs are based on Australian Standard 1726. No further geotechnical investigations are proposed.

The Statement of Commitment reflects that RailCorp would be consulted during development of the detailed designs to ensure that potential impacts associated with existing and proposed underground infrastructure are mitigated to an acceptable level. As the intent of the consultation process is to identify and resolve issues, it is not considered necessary that RailCorp formally endorse the design.

EnergyAustralia do not propose to enter into an agreement at the commencement of works as proposed by RailCorp. Stage 2D works are to commence at the site for the proposed Riley Street STSS and move northwards. The Riley Street site is approximately 1.6 km from the nearest rail infrastructure (the Eastern Suburbs Railway tunnels beneath The Domain) and tunnelling is not expected to reach this point until approximately 21 months into the construction period. At this location, the CECT would be approximately 18m below the Eastern Suburbs Railway tunnels. As such, EnergyAustralia believe it is reasonable that shoud it be determined that an agreement is required, it be finalised prior to any works commencing within 25m of the existing rail tunnels or infrastructure.

4.13.2 Issue 2 Future rail corridor

RailCorp's suggested conditions of consent relating to the protection of future rail corridors include:

1. Before construction commences, the Proponent must consult with Railcorp about impacts on existing rail infrastructure and the planned CBD Rail Link (CBDRL).
2. The Proponent must design, construct and maintain the cable tunnel so as to:
    a) not interfere with either existing rail infrastructure or the capacity to design, construct and operate the CBDRL;
    b) provide for impacts from the construction, operation and maintenance of the CBDRL;
    c) provide for impacts, including stray currents and vibration, from rail operations.
3. Before construction commences, the Proponent must obtain from RailCorp and comply with a Rail Access Authority as provided under the Master Deed for Access to Rail Corridor between EnergyAustralia and RailCorp.
4. The Proponent must advise the Director-General of such authority as soon as practicable after an authority has been issued by RailCorp.
5. Before construction commences, the Proponent must enter and comply with an agreement with RailCorp to ensure that the capacity to design, construct and operate the CBRL is not impeded. The agreement is to at least address:
    a) the provision of design documentation, technical reports and other information to RailCorp before construction commences and the ongoing provision of information;
    b) the taking into account RailCorp submissions, including those related to designs, design modifications, technical reports and other documents, where there may be an impact on the capacity to design, construct and operation the CBDRL; and
    c) notification to RailCorp of events that affect existing rail infrastructure and the planned CBDRL.
6. The proponent must advise the Director-General of such agreement as soon as practicable after agreement has been reached.

Response

RailCorp has been consulted regarding the project over an extended period of time and this consultation would continue during the construction phase. While EnergyAustralia does not object to the intent of the recommended conditions, the final wording would be revised during negotiation of the MCoA with the Department of Planning.

As stated in Section 4.13.1, it is not proposed to enter into agreements with RailCorp prior to commencement of construction due to the long duration between commencement of construction and any works being undertaken within 25m of RailCorp assets. If required, EnergyAustralia would enter into agreements with RailCorp prior to works commencing within 25m of RailCorp infrastructure. Consultation regarding the agreements would commence early in the project to ensure that finalisation of the agreement does not delay construction.

4.14 Submission 13 – RTA

4.14.1 Issue 1 Proximity to Cross City Tunnel

The RTA raised concern regarding the proximity of the CECT to the Cross City Tunnel (CCT) and associated foundations/rock anchors. The Motorways and Management section of the RTA is currently in discussions with EnergyAustralia and the CCT operator to resolve operational, contractual and legal issues associated with the development.

The RTA advised that due to the issues associated with the CCT they currently do not have enough information to grant its concurrence to the application under Section 138 of the *Roads Act 1993.*

Response

The Statement of Commitments reflects that the RTA and Cross City Motorway would continue to be consulted during development of the detailed designs to ensure that potential impacts associated with existing and proposed underground infrastructure are mitigated to an acceptable level. This would include consideration of the location and impact of associated items such as rock bolts and rock anchors.

A stakeholder agreement would be developed between EnergyAustralia and RTA/Cross City Motorway, as necessary prior to construction in the vicinity of the CCT.

4.15 Submission 14 – Community member

4.15.1 Issue 1 Noise

The submission supported the project, but raised concerns over the potential noise impacts, particularly during the morning and evening periods. It was requested that vehicle movements associated with the project not occur on the Riley Street site prior to 7 am.

Response

Section 6.4 of the Environmental Assessment indicates that construction works outside the tunnel would generally be undertaken between the following hours:

- Monday to Friday: 7.00 am to 7.00 pm,
- Saturday: 7.00 am to 5.00 pm.

As such, construction activities would not generally occur prior to 7.00 am at the Riley Street site. The CEMP would include measures to ensure that the workforce is aware of this restriction.

Occasional activities may occur outside the standard construction hours including, but not limited to, oversize truck movements and deliveries of certain plant and equipment on an occasional basis. Works may also be undertaken outside these hours in the event of a direction from police or other relevant authority for safety reasons, or emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

The construction Noise and Vibration Management Plan would detail measures to consult with the local community in advance of works occurring outside standard hours, where reasonable and feasible.

4.15.2 Issue 2 Tunnel alignment

It was requested that greater clarification be provided regarding the tunnel alignment beneath Albion Street. The submission noted that some of the plans show a tunnel beneath Albion Street, proceeding directly under a block of units however there appears to be no details regarding the proposed tunnel.

Response

An 80m long back shunt tunnel extending from the shaft within the Riley Street compound would be excavated by roadheader. This would pass beneath Albion Street and terminate below an apartment block on the corner of Albion Street and Riley Street. The back shunt tunnel would be a temporary structure built to facilitate construction. It would be approximately 4m wide by 4m high, supported using rock bolts and

reinforced concrete. It would be about 23m below the basement of the apartment building in good quality rock.

The tunnel boring machine and associated back-up facilities would be delivered to the site in sections. These sections would be lowered into the shaft and assembled in the back shunt tunnel. At the completion of construction, the back shunt tunnel would be filled with a concrete mix.

4.15.3 Issue 3 Consultation

The submission noted that the community consultation process was not effective for the unit block located at 300 Riley Street and no newsletters were received (except by courtesy of the Strata Manager).

The submission raised concern that the community consultation for the project would continue to be inadequate. It requested that the effectiveness of the consultation process be scrutinised and special attention be paid to those buildings bordering the proposed Riley Street compound.

Response

This issue is addressed in Section 4.5. EnergyAustralia met with a member of the body corporate and this person agreed to distribute copies of both newsletters to the apartment block listed as residential address for the person that made this submission.

Section 4.5 of the Environmental Assessment indicates that a Community Liaison Group would be formed for the Riley Street site as this would be the main construction site for the project. The group would contain representatives of local businesses, residents, council and other interested parties. The Statement of Commitments has been revised to specifically refer to formation of this Community Liaison Group.

5. Statement of commitments

As required by MCoA 3.1c of the Concept Approval, EnergyAustralia provided project specific commitments for environmental mitigation, management and monitoring as part of the Stage 2D Environmental Assessment. These commitments were presented in Table 17.1 and are consistent with the Statement of Commitments prepared for the Sydney CityGrid Concept Environmental Assessment. The draft Statement of Commitments has been reviewed and amended to address changes to the project since exhibition of the Environmental Assessment and issues raised in submissions. The final Statement of Commitments is provided in Table 5 1, and changes to the draft Statement of Commitments are displayed in blue.

The Statement of Commitments is additional to EnergyAustralia's obligations under the Concept Approval.

Table 5-1 Revised Statement of Commitments

Key Issue	Commitment
Noise and vibration	Construction would generally be carried out during the following hours: • Monday to Friday 7 am to 7 pm • Saturdays 7 am to 5 pm • No work on Sundays or Public Holidays Noise intensive activities such as rock breaking would be undertaken during the following hours: • Monday to Saturday 7 am to 12 pm • Monday to Friday 2 pm to 5 pm • At no time on Sundays or Public Holidays Subsurface works associated with construction of the tunnels and works within the acoustic enclosure at the Riley Street site would occur 24 hours per day. Other activities that may occur outside the standard construction hours include, but may not be limited to, oversize truck movements and deliveries of certain plant and equipment on an occasional basis. Works may also be undertaken outside these hours in the event of a direction from police or other relevant authority for safety reasons, or emergency work to avoid the loss of lives, property and/or to prevent environmental harm.
	A noise and vibration management sub-plan would be prepared as part of the CEMP and would: • Identify potentially affected receivers in the vicinity of the site, activities to be carried out, ancillary facilities, and associated sources of construction noise; • Quantify the background noise level for the sensitive receivers nearest to the surface construction compounds; • Identify the construction noise, ground-borne noise and vibration objectives for the nearest sensitive receivers in accordance with the Interim Construction Noise Guideline and Assessing Vibration - Technical Guideline; • Provide an assessment of potential levels during construction against the noise and vibration goals and identify locations where these goals are predicted to be exceeded; • Identify reasonable and feasible mitigation measures to reduce noise and vibration levels where the objectives would be exceeded. This may include options such as reducing the cutting rate of tunnelling machines to reduce potential impacts associated with regenerated noise; • Describe noise and vibration management methods and procedures that would be implemented, including measures to monitor compliance with the objectives; and • Detail procedures for consulting with the community regarding potential noise and vibration impacts that have the potential to affect their amenity. This would include a protocol for managing complaints in accordance with MCoA 4.3 of the Concept Approval (refer to the Community Information Plan).

Key Issue	Commitment
Noise and vibration	The following general management measures would be included in the noise and vibration management sub-plan: • Where necessary to comply with noise and vibration criteria and where feasible and practicable, rock saws would be used to cut the perimeter of the shaft excavation and and/or lighter rock breakers would be used; • Where reasonable and feasible, plant and equipment such as excavators, cranes and trucks would be fitted with silencers, low noise mufflers (residential standard), and reversing alarms on vehicles would be replaced with silent measures; • Where possible, plant would be located and orientated to direct noise away from sensitive receivers; • Where possible, deliveries would be carried out within standard construction hours; • Plant and equipment would be selected to minimise noise emission, in-so-far-as possible whilst maintaining efficiency of function. All plant and equipment would be maintained in good order; • Mobile plant and trucks operating on site for a significant portion of the project would have reversing alarm noise emissions minimised as far as possible, recognising the need to maintain occupational safety; and • Solid hoardings and/or site sheds would be erected on work site boundaries to function as noise barriers.
	A dilapidation survey would be undertaken of certain buildings, services and structures identified by EnergyAustralia's engineering designers as being potentially sensitive to vibration or settlement prior to commencement of construction. This would include inspecting heritage listed buildings to determine whether they are structurally sound, and if so, whether the vibration criteria for residential buildings should be applied to the heritage listed buildings. A post construction dilapidation survey would also be undertaken. Any damage attributable to the project would be repaired at EnergyAustralia's expense.
Non-indigenous heritage	If any unexpected historical relic(s) are encountered during the course of construction, all work likely to affect the relic(s) would cease immediately and the Heritage Branch of the Department of Planning would be notified in accordance with the *Heritage Act 1977.*
Indigenous heritage	If any unexpected Aboriginal object(s) are encountered during the course of construction, all work likely to affect the object(s) would cease immediately and the DECCW would be informed in accordance with Section 91 of the *National Parks and Wildlife Act 1974.* DECCW and the Metropolitan Local Aboriginal Land Council would be consulted to confirm an appropriate course of action. This may involve the object being collected, recorded and deposited at the Australia Museum in accordance with standard archaeological practice.
Storage of dangerous goods	All dangerous goods (as defined by the Australian Dangerous Goods Code) and combustible liquids, would be stored and handled strictly in accordance with: • All relevant Australian Standards; • A minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and • The DECC's *Environment Protection Manual Technical Bulletin Bunding and Spill Management.*
Hazards and risks	EnergyAustralia would identify the services potentially affected by construction activities to determine requirements for diversion, protection and/or support.
	EnergyAustralia's contractors would prepare and implement construction safety sub plans to manage hazardous incidents and public safety during the construction of the project.

Key Issue	Commitment
Air quality	A construction air quality management plan would be prepared as part of the CEMP and would include the following measures to manage potential impacts on air quality: • During tunnel construction, all air would be ventilated through a filter unit such that discharged air meets the requirements of the Protection of the *Environment Operations (Clean Air) Regulation 2002* (as amended); • Exposed surface areas would be managed via dust mitigation measures; • Wheels of all site plant and vehicles would be cleaned so that material with potential to generate dust is not spread on surrounding roads; • Sealed roads around construction sites would be swept if necessary to remove deposited material with potential to generate dust; • Water may be used to suppress dust emissions from activities such as earthworks, stockpiles etc (as required); • The height from which dust generating material is dropped would be minimised; • Loaded trucks carrying spoil would be covered at all times; • Cutting/grinding of materials on site would be kept to a minimum, but if necessary equipment and techniques to minimise dust would be used; • Potentially dusty materials would be handled as little as possible; • Construction plant and vehicles would be well maintained and regularly serviced. Visible smoke from plant would be avoided. Defective plant would not be used; • Engines would be switched off when vehicles are not in use and refuelling areas would be away from areas of public access; and • Where practicable and feasible, loading and unloading would take place within the site.
	The air quality management plan would also: • Establish a protocol to handle dust complaints that includes recording, reporting and appropriate actions for excepted types of complaints; • Include a reactive management program detailing how and when operations are to be modified to minimise the potential for dust emissions, should emissions exceed the relevant criteria; and • Address the monitoring, management and control of air pollutants including gaseous substances generated during construction.
Detailed design investigations	Detailed design of the tunnels and associated infrastructure would be undertaken based on the results of geotechnical investigations to minimise potential impacts associated with ground settlement and stability.
	RailCorp, RTA, Cross City Motorway, Sydney Water, Royal Botanic Gardens and Domain Trust and Transport NSW would continue to be consulted during development of the detailed designs to ensure that potential impacts associated with existing and proposed underground infrastructure are mitigated to an acceptable level. This would include consideration of the location and impact of associated items such as rock bolts and rock anchors.
	If required, stakeholder agreements would be developed between EnergyAustralia and Railcorp, RTA, Cross City Motorway, Royal Botanic Gardens and Domain Trust and Transport NSW prior to construction in the vicinity of the stakeholders assets.

Key Issue	Commitment
Soil and water	A Water Quality Management Sub-Plan would be prepared as part of the CEMP for the project. The sub-plan would be prepared in accordance with 'Managing Urban Stormwater: Soils and Construction' (Volume 1, 4th Edition, the 'Blue Book', Landcom, 2004) and would detail specific measures to be implemented to manage soil, surface and groundwater impacts during construction. It would identify opportunities for on-site reuse of groundwater and surface water, and include a program for monitoring the effectiveness of the sediment control system. Groundwater and surface water discharges during construction and operation would be managed to comply with the requirements of Section 120 of the POEO Act.
	Treated water from the Campbell Street WTP would be monitored in accordance with the Operational Environmental Management Plan for the Sydney CBD 132kV Cable Project during operation of the project.
	The NSW Office of Water (NOW) would be consulted during preparation of the Water Quality Management Sub-Plan and the following information would be provided to allow NOW to determine whether a license is required under Part 5 of the *Water Act 1912;* • Estimated pumping volumes, flow rates and water quality data; and • Details regarding geotechnical investigations and analysis relating to groundwater. NOW would be provided with a copy of the Water Quality Management Sub-Plan.
	Consultation with Sydney Water Corporation and/or the City of Sydney would be undertaken to determine whether there are any capacity limitations within the stormwater system that would influence the location of the connection for the water discharged from the treatment system.
Spoil and waste management	A spoil and waste management sub-plan would be prepared as part of the CEMP and would identify how spoil and other waste material would be handled, reused and disposed. It would address the principles of the waste hierarchy and relevant health and safety as well as environmental legislation and would include measures such as: • All waste would be managed in accordance with DECC's *Waste Classification Guideline* (2008); • Arrangements to reduce the volume of materials being brought onto site such as packaging. Construction materials would be ordered in the correct quantities to minimise waste; • Reuse or recycling of demolition and excavation materials would be undertaken wherever practicable. Stockpile areas would be allocated for construction and demolition waste to allow separate stockpiling of recyclable and non-recyclable materials. Colour coded and clearly marked containers for different recyclable materials would be provided; • Records would be kept of all waste volumes and destinations; • Sites for disposal of surplus spoil would be selected according to the rate of development activity and the volumes of material generated elsewhere; • Ongoing training would be provided for construction personnel to ensure correct sorting of waste and recyclable materials and promote the principles of the waste hierarchy. Waste minimisation and management would be included in tool box sessions and site management planning; and • Any synthetic mineral fibres would be bagged or wrapped in plastic and handled per Worksafe Australia's *Synthetic Mineral Fibres – National Standard and National Code of Practice.*

Key Issue	Commitment
Traffic and access	A construction traffic management plan would be prepared in consultation with RTA and City of Sydney Council as part of the CEMP and would include the following measures to manage potential impacts on the traffic and transport network: • General signposting of streets in the immediate vicinity of the construction sites with appropriate heavy vehicle and construction warning signs; • If temporary road closures are required, traffic control measures specified in "AS1742.3: 2002 Traffic Control Devices for Works on Roads" and the RTA's "Traffic Control at Work Sites" would be detailed in a traffic control plan and subsequently implemented; • Development of a suitable vehicle detour route, if required, during specific construction activities; • Installation of specific warning signs and safety devices at entrances to the Riley Street construction site to warn road users of entering and exiting construction traffic; • Preparation of a pedestrian management plan that details measures to be implemented to minimise impacts on pedestrian movement and maintain pedestrian safety. Specific consideration would be given to activities undertaken in the vicinity of work sites in Riley Street, Little Albion Street, and Yurong Parkway; • In addition to relevant Australian Standards and RTA guidelines, all traffic management would also conform to Workcover NSW "Code of Practice for Working Near Traffic and Mobile Plant"; • Barriers approved by the RTA and/or meeting relevant Australian Standards would be provided between the construction sites and trafficable areas. Pedestrian and cycle diversions would be required during the works; • Management of the transportation of construction materials to maximise vehicle loads to therefore minimise vehicle movements; • Inducting truck and vehicle operators on the requirements of the traffic management plan; and • An event specific traffic management plan would also be prepared if there are any special events in the CBD that would potentially be impacted by traffic movements associated with the project. The time and duration of these events would be clearly noted and construction delivery processes would be rearranged to cater to the affected days.
	Prior to the commencement of construction, dilapidation reports would be prepared for sections of Riley Street, Albion Street, Little Albion Street, Underwood Street, Crawford Place and Yurong Parkway in the immediate vicinity of the sites that are likely to be used by construction traffic. Any road/ footpath damage attributed to the project, aside from that resulting from normal wear and tear, would be repaired to the pre-existing standard at EnergyAustralia's cost.
	If required, approval to operate cranes or other construction vehicles which occupy the road reserve would be obtained.
Urban design	The contractor would implement reasonable and feasible measures to refine the construction method to minimise the number of street trees to be removed. Any trees removed would be replaced with advanced stock and the species would be selected in consultation with the City of Sydney Council. The City of Sydney would be consulted regarding the need to remove street trees and measures to be implemented to minimize impacts on street trees in the immediate vicinity of construction sites.

Key Issue	Commitment
Consultation	A Community Information Plan would be prepared in accordance with the requirements of MCoA 4.3 of the Concept Approval. This would set out the community communications and consultation processes to be undertaken during Stage 2D and would include specific consultation regarding issues such as: • Noise and vibration – This would include identifying receivers that are likely to experience noise or vibration that exceeds relevant goals and outlining methods that would be implemented to ensure these receivers are consulted regarding the timing and duration of works, including reasonable and feasible mitigation measures that will be implemented. A sliding scale of responses that may be implemented depending on the impact at individual locations would be developed; • Traffic and access - A community information and awareness program would be initiated prior to construction commencing and during the construction period to ensure that those in the surrounding area are fully aware of the construction activities with particular regard to construction traffic accessing the sites. The awareness program would identify communication protocols for community feedback on issues relating to construction vehicle driver behaviour and construction related matters; and • Any street trees that would be removed to facilitate construction.
	A Community Liaison Group would be formed to provide information to the community in the vicinity of the Riley Street site. The Community Liaison Group would contain representatives of local businesses, residents, Council and other interested parties.
Cumulative impacts	As construction of the Riley Street STSS (Stage 2C) would occur concurrently with construction activities at the Riley Street compound, cumulative impacts are likely to occur during the overlapping phases of construction. These cumulative impacts would be assessed during preparation of the Environmental Assessment for Stage 2C.
	EnergyAustralia would prepare a Coordinated Construction Environmental Management Protocol that would: • Identify major projects undertaken by EnergyAustralia in the Sydney CBD that have the potential for cumulative construction impacts with Stage 2D of the Sydney CityGrid Project. This would consider the construction programs for major projects undertaken by EnergyAustralia to determine whether there is the potential for cumulative construction impacts. • Identify potential cumulative impacts and reasonable and feasible opportunities to implement a coordinated approach to manage potential cumulative impacts from major projects. • Define procedures for access to, and provision of, monitoring data from each major project. • Confirm arrangements for communication between those undertaking major projects, including designated contact persons and contact details. • Define notification procedures in the event of an incident at any of the major projects that may impact on the other projects or generate significant common or cumulative impacts.

6. Conclusions

EnergyAustralia has reviewed the submissions received in response to exhibition of the Environmental Assessment that formed part of the application for Project Approval for Stage 2D of the City East Zone Substation. This Submissions Report and Preferred Project Report addresses the issues raised in submissions and describes a change to the project that is assessed in the Environmental Assessment.

Stage 2D of the City East Zone Substation was described in Chapter 6 of the Environmental Assessment and involved:

- Construction of the 3.2 km CECT between a site on the corner of Albion Street and Riley Street, Surry Hills, and the City North Zone Substation at northern end of the CBD, with connections to the proposed City East and existing Dalley Street Zone Substations;
- Extension of the existing CSCT over a length of approximately 150 m; between the existing Surry Hills shaft at Wade Place, Surry Hills, and the site proposed for the Riley Street STSS on the corner of Albion and Riley Streets, Surry Hills;
- A shaft in The Domain to connect two 33kV feeders from the CECT (Domain Shaft) to the local network; and
- If required, refurbishment of the existing Dalley Street Zone Substation involving replacement of equipment such as switchgear. This would require a shaft in Dalley Street to connect the CECT to the Dalley Street Zone Substation.

Since the exhibition of the Stage 2D Environmental Assessment the project has been refined and the existing Dalley Street Zone Substation is no longer proposed to be refurbished as part of the project . This effect of this change is that:

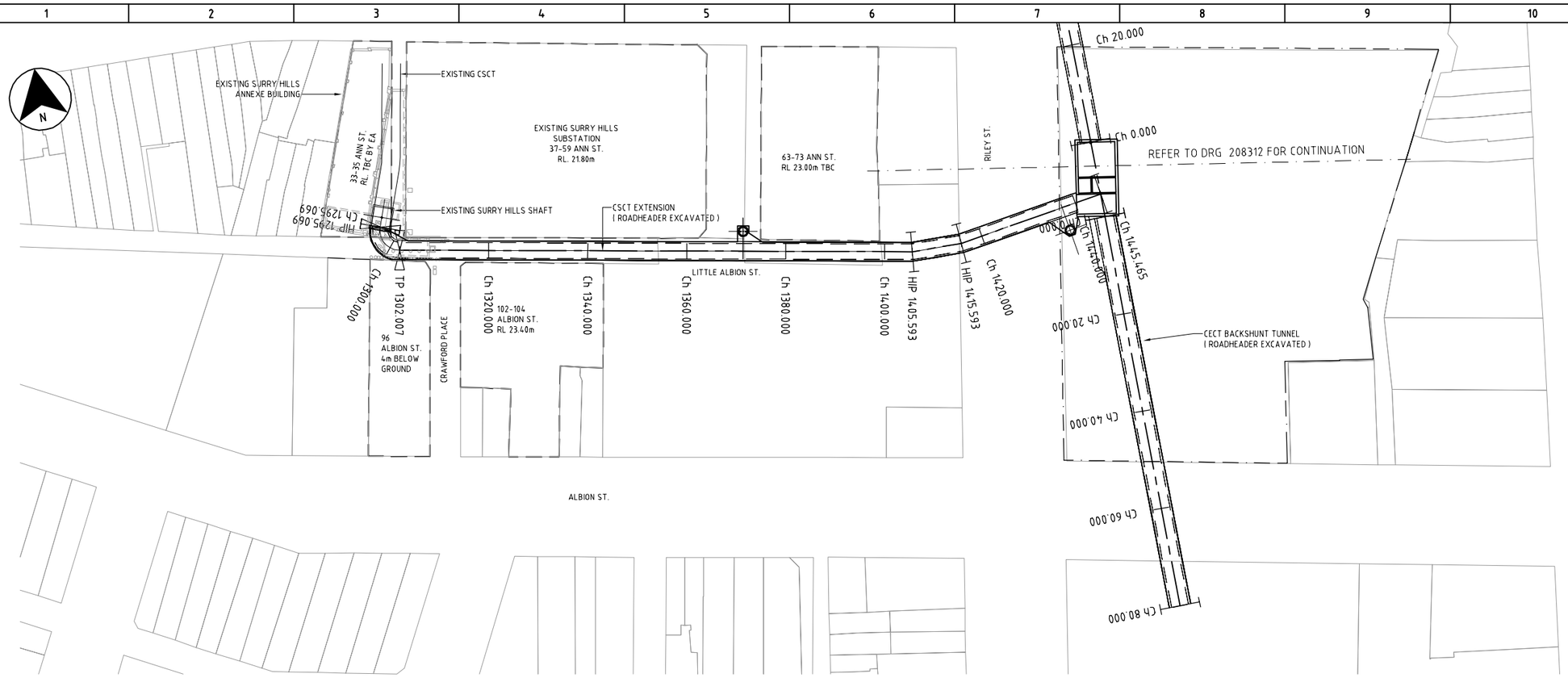
- The refurbishment of the Dalley Street Zone Substation would no longer form part of the Sydney CityGrid Project.
- The CECT route would be realigned in the vicinity of Bridge Street as indicated in Figure 3-1.

The Statement of Commitments has been reviewed and amended to address issues raised in submissions (where required) and ensure that potential environmental impacts are appropriately managed.

The project would be constructed in accordance with a CEMP that would include a suite of sub-plans to address construction related issues raised in submissions.

While the project is likely to result in short term localised adverse construction impacts, it would lead to significant long-term benefits as part of the broader Sydney CityGrid Project. Based on this, the environmental impacts are considered to be justified.

Appendix A
Alignment drawings

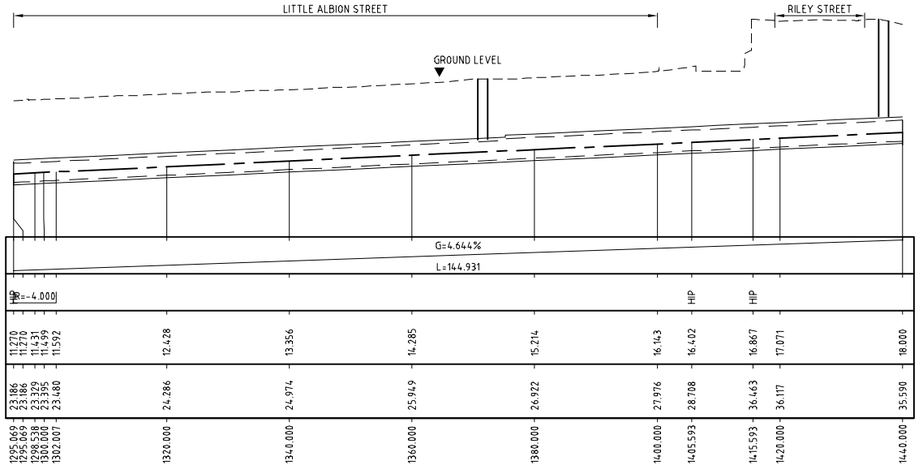


NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.

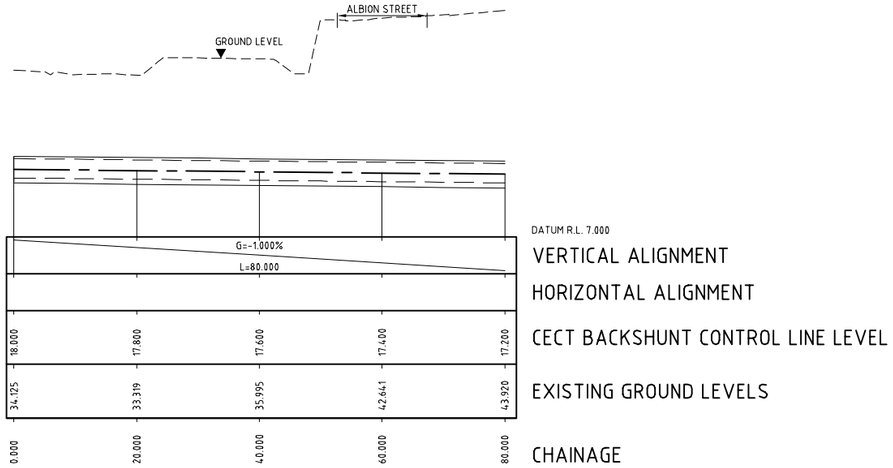
HORIZONTAL ALIGNMENT - CITY SOUTH CABLE TUNNEL (CSCT) EXTENSION AND CITY EAST CABLE TUNNEL (CECT) BACKSHUNT

SCALE 1:500



LONGITUDINAL SECTION - CSCT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500



LONGITUDINAL SECTION - BACK SHUNT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
J	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
H	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
G	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
F	J.W.	13.07.10	LT. RILEY AND ROSEBAY FEEDERS ADDED	M.F.
E	J.W.	28.04.10	TUNNEL PROFILES REVISED	A.V.
			RILEY ST. SHAFT RELOCATED. ALIGNMENT REVISED	
D	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.
C	J.W.	26.02.10	DRAFT CONCEPT DESIGN ISSUE	A.V.

SCALES:

5 0 5 10 15m

1:500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
CITY SOUTH CABLE TUNNEL EXTENSION
AND TEMPORARY CECT BACKSHUNT TUNNEL

DRAWING No 208311 | SHEET 1 | AMD J | SIZE A1

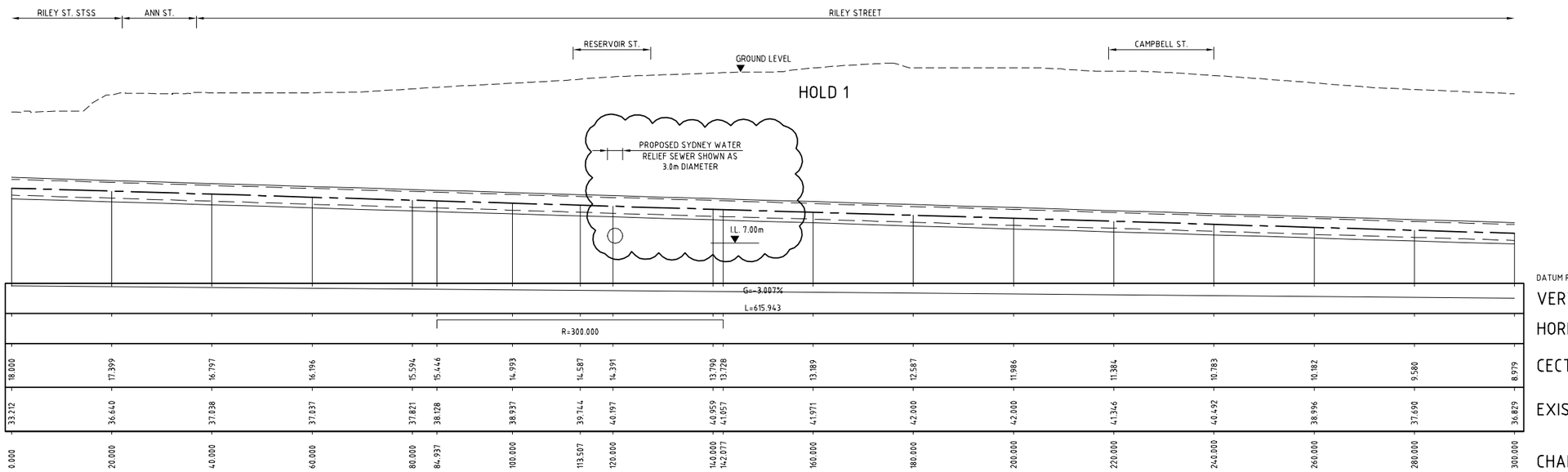
HORIZONTAL ALIGNMENT - CECT
SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.

HOLD 1

EA TO AGREE CLEARANCE WITH SYDNEY WATER PRIOR TO CONSTRUCTION.



LONGITUDINAL SECTION - CECT
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

DATUM R.L. -1.000

VERTICAL ALIGNMENT

HORIZONTAL ALIGNMENT

CECT CONTROL LINE LEVEL

EXISTING GROUND LEVELS

CHAINAGE

NOT FOR CONSTRUCTION

DETAIL DESIGN

No.	BY	DATE	DESCRIPTION	APPD
G	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
F	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
E	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			RILEY ST. SHAFT RELOCATED. ALIGNMENT REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.
B	J.W.	26.02.10	DRAFT CONCEPT DESIGN ISSUE	A.V.
			CHAINAGE REVISED & VERTICAL ALIGNMENT ADDED	

CAD DRAWING DO NOT MANUALLY AMEND AMENDMENTS

SCALES: 5 0 5 10 15m — 1:500 FULL SIZE A1

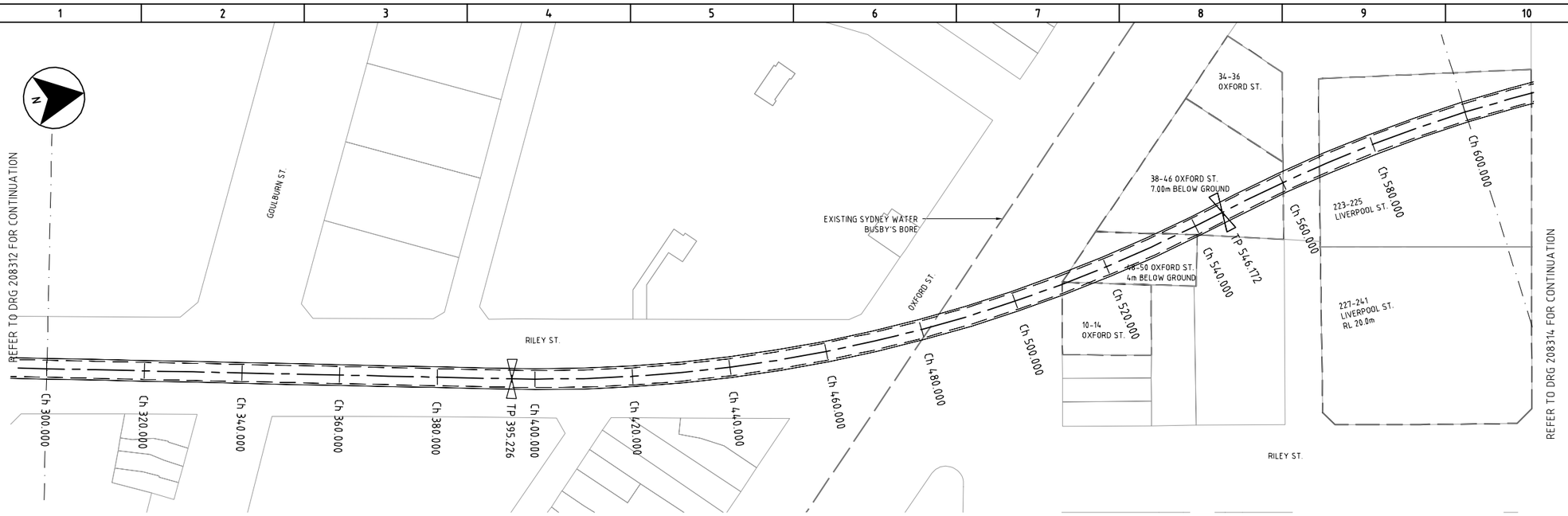
DESIGNER: AECOM
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT: EnergyAustralia®
570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 0.000 - Ch. 300.000

DRAWING No 208312 | SHEET 2 | AMD G | SIZE A1

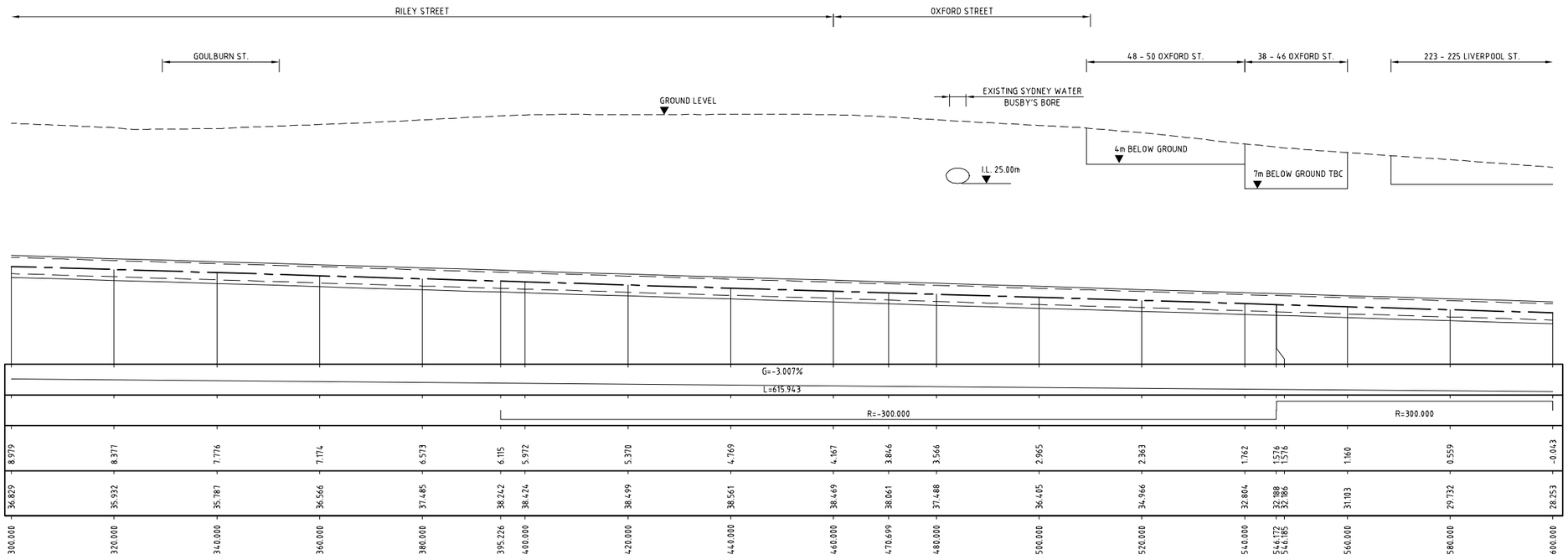


HORIZONTAL ALIGNMENT - CECT

SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

DATUM R.L. -10.000

VERTICAL ALIGNMENT

HORIZONTAL ALIGNMENT

CECT CONTROL LINE LEVEL

EXISTING GROUND LEVELS

CHAINAGE

NOT FOR CONSTRUCTION

DETAIL DESIGN

No.	BY	DATE	DESCRIPTION	APPD
G	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
F	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
E	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			ALIGNMENT RE-ROUTED TO YURONG ST.	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.
B	J.W.	26.02.10	DRAFT CONCEPT DESIGN ISSUE	A.V.
			CHAINAGE REVISED & VERTICAL ALIGNMENT ADDED	

CAD DRAWING DO NOT MANUALLY AMEND AMENDMENTS

SCALES: 5 0 5 10 15m — 1:500 FULL SIZE A1

DESIGNER: AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

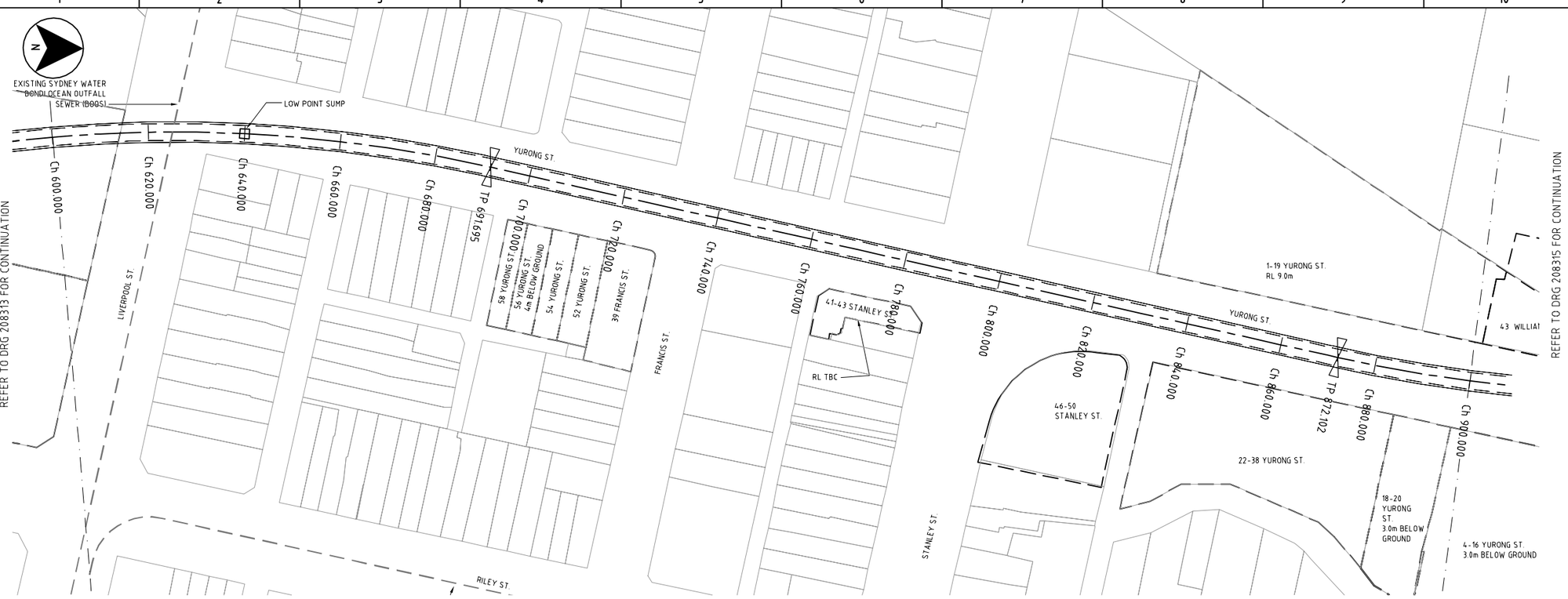
CLIENT: EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 300.000 - Ch 600.000

DRAWING No 208313 | SHEET 3 | AMD G | SIZE A1

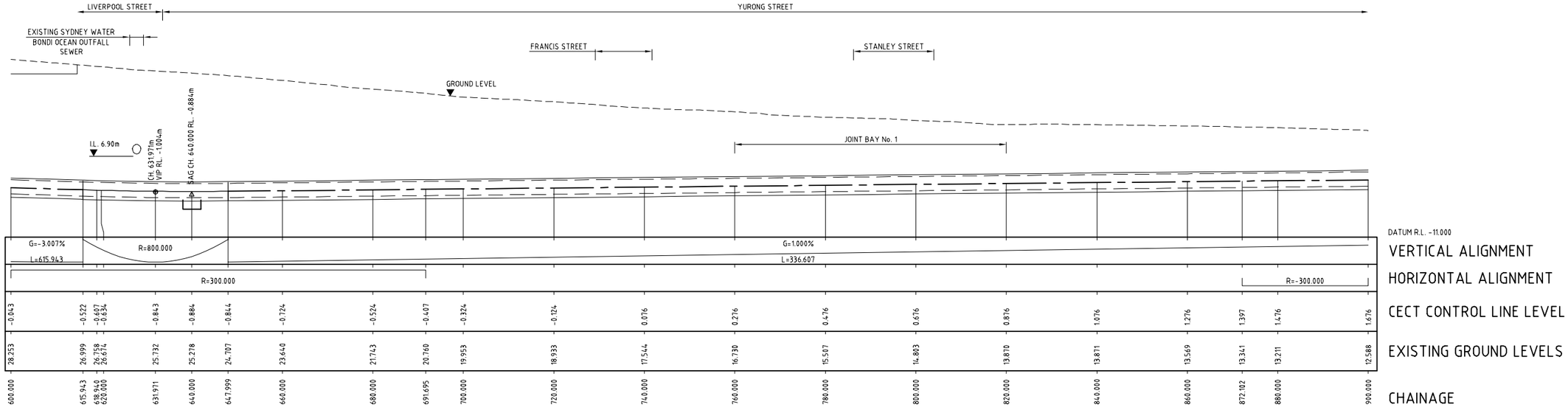


HORIZONTAL ALIGNMENT - CECT

SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
H	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
G	J.W.	19.10.10	VERTICAL ALIGNMENT AND JOINT BAY LENGTH AMENDED	A.V.
F	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
E	J.W.	09.07.10	B.O.O.S. REVISED	M.F.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			ALIGNMENT RE-ROUTED TO YURONG ST.	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.

SCALES:

5 0 5 10 15m
1:500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

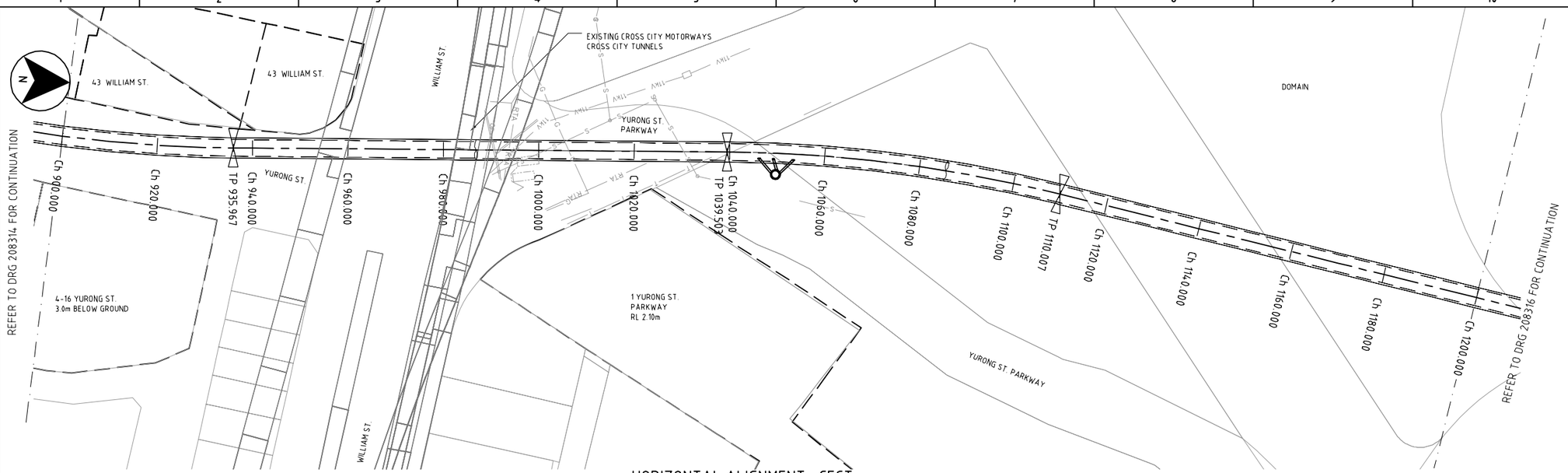
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 600.000 - Ch 900.000

DRAWING No 208314 | SHEET 4 | AMD H | SIZE A1

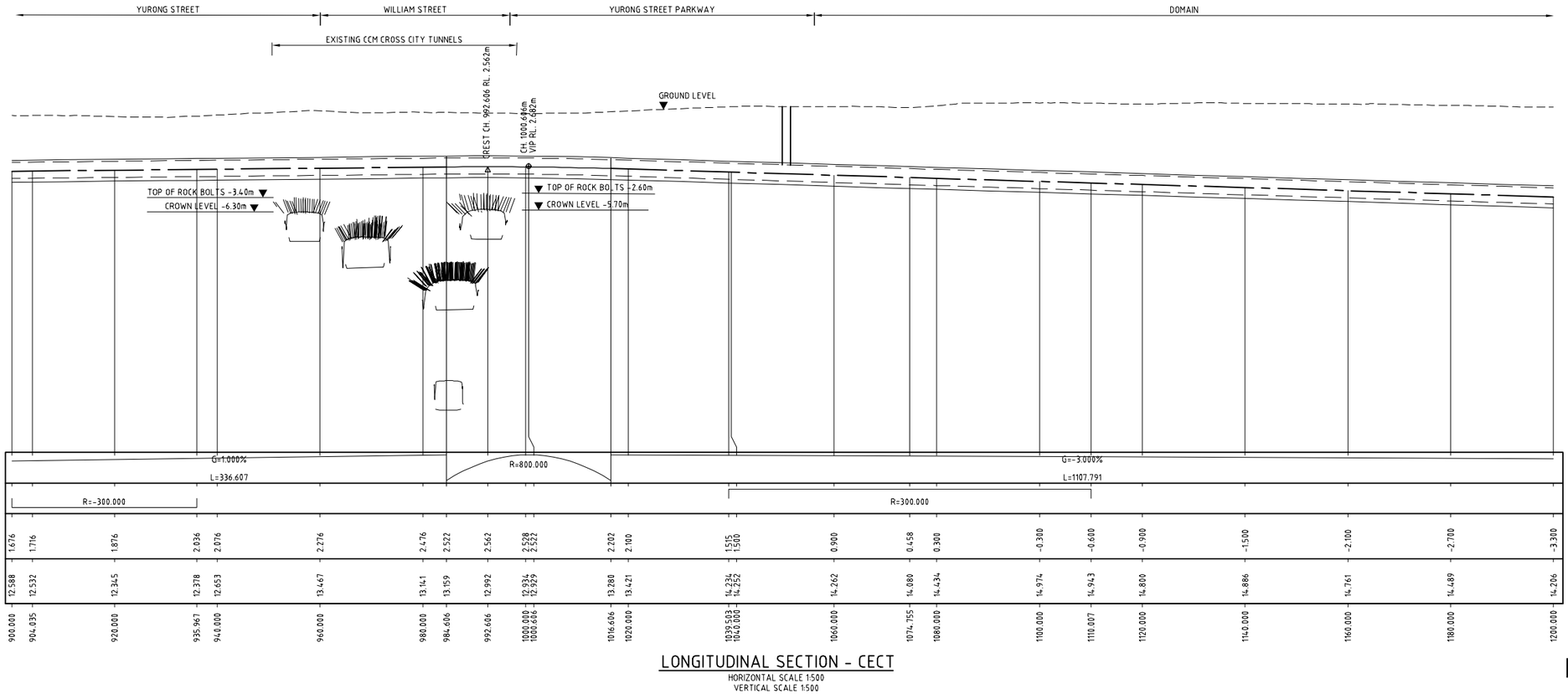


HORIZONTAL ALIGNMENT -CECT

SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

DATUM R.L. -53.000

VERTICAL ALIGNMENT

HORIZONTAL ALIGNMENT

CECT CONTROL LINE LEVEL

EXISTING GROUND LEVELS

CHAINAGE

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
H	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
G	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
F	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
E	J.W.	13.07.10	DOMAIN FEEDER REVISED	M.F.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.

SCALES:

5 0 5 10 15m
1:500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

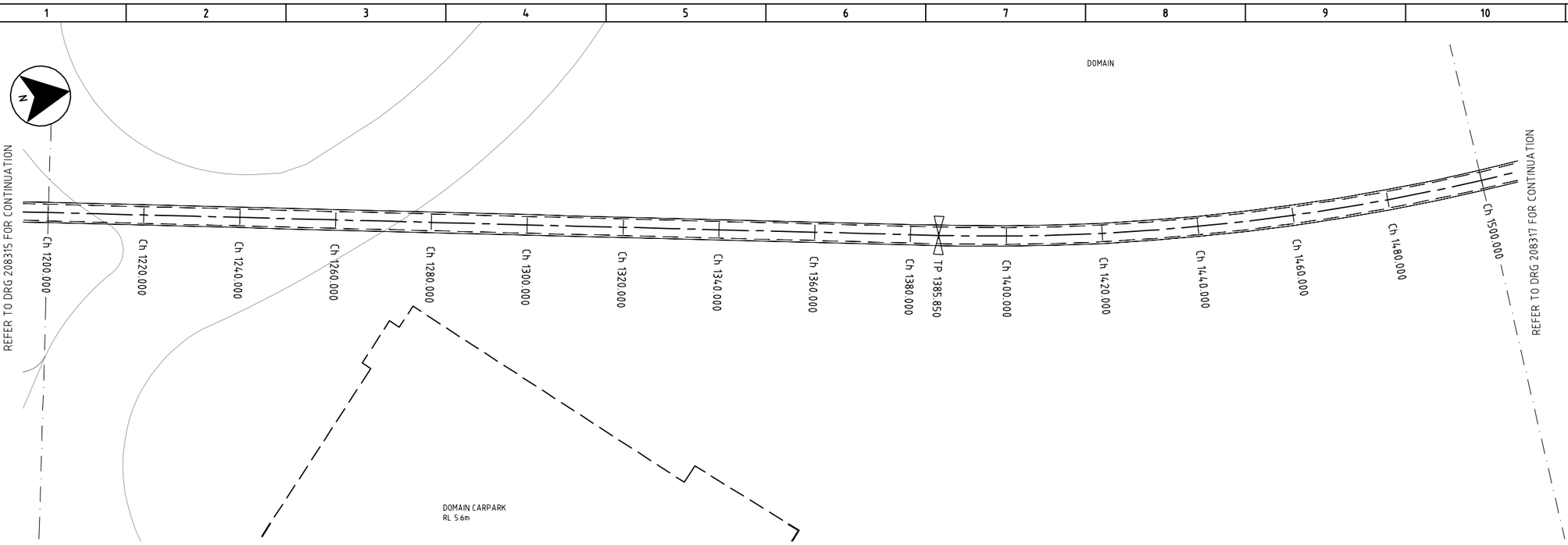
SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 900.000 - Ch 1200.000

DRAWING No 208315 | SHEET 5 | AMD H | SIZE A1

Last modified: 23 Dec 10 - 11:22

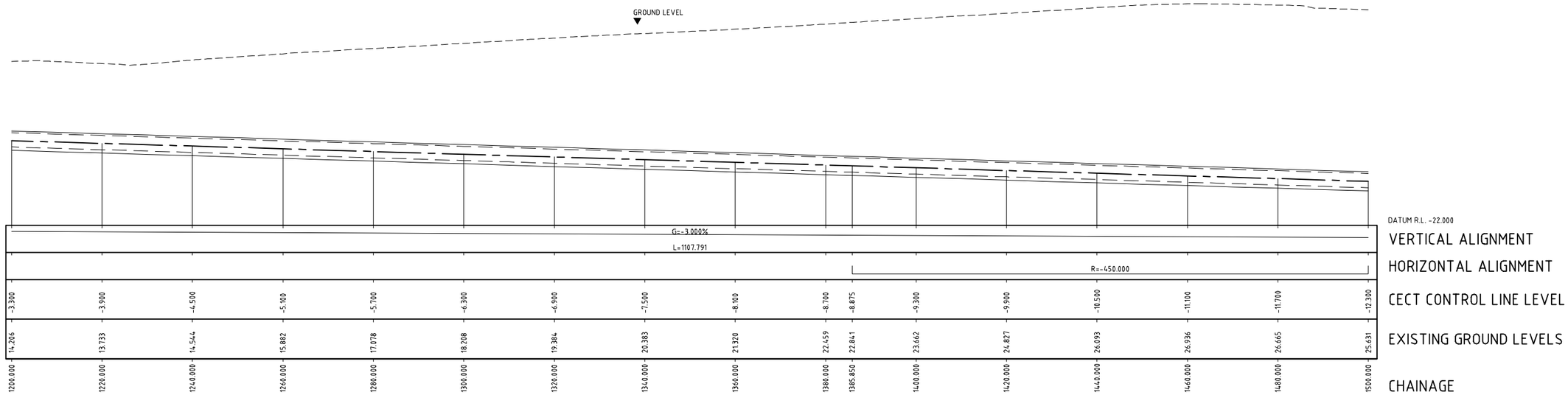
Cad ref: K:\60102986_CECT132kV_CbNTS_CADDS13 Working\Drg\20_Final_Design\208316.dwg



HORIZONTAL ALIGNMENT- CECT

SCALE 1:500

DOMAIN



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
G	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
F	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
E	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.
B	J.W.	26.02.10	DRAFT CONCEPT DESIGN ISSUE	A.V.
			CHAINAGE REVISED & VERTICAL ALIGNMENT ADDED	

SCALES:

5 0 5 10 15m

1:500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

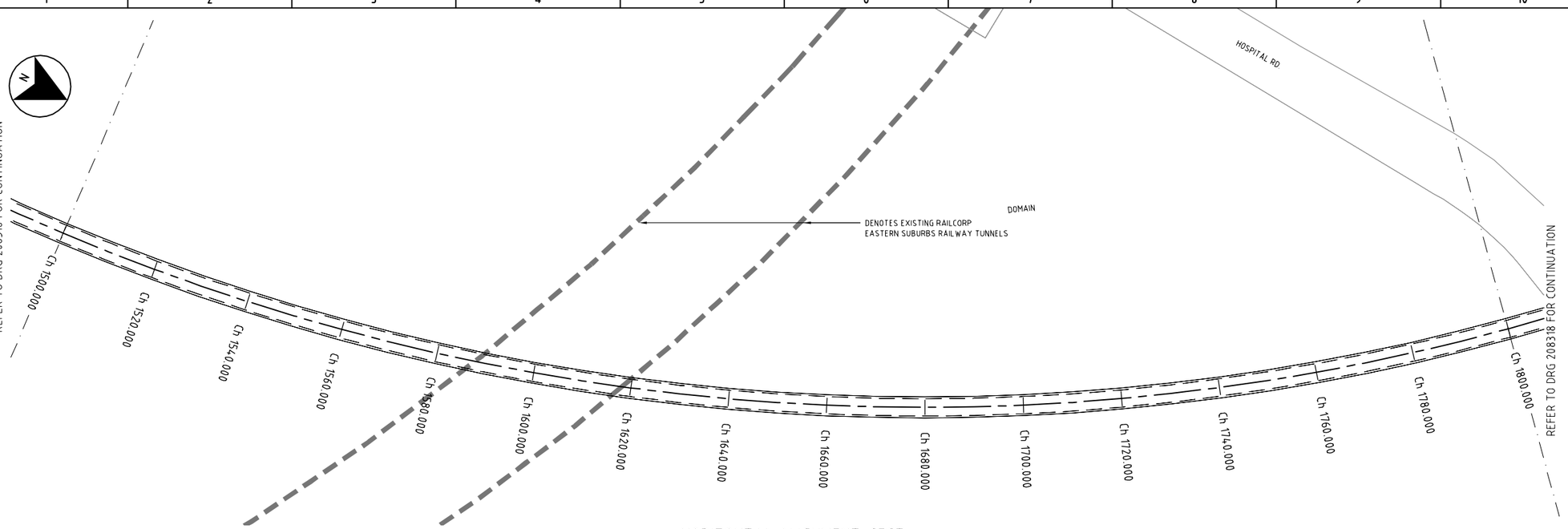
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 1200.000 - Ch 1500.000

DRAWING No 208316 | SHEET 6 | AMD G | SIZE A1

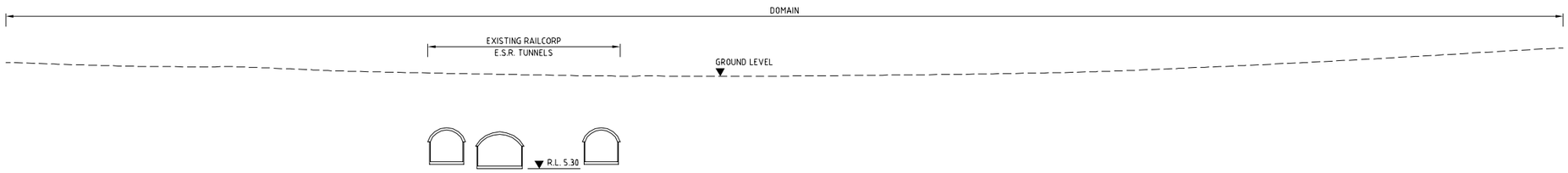


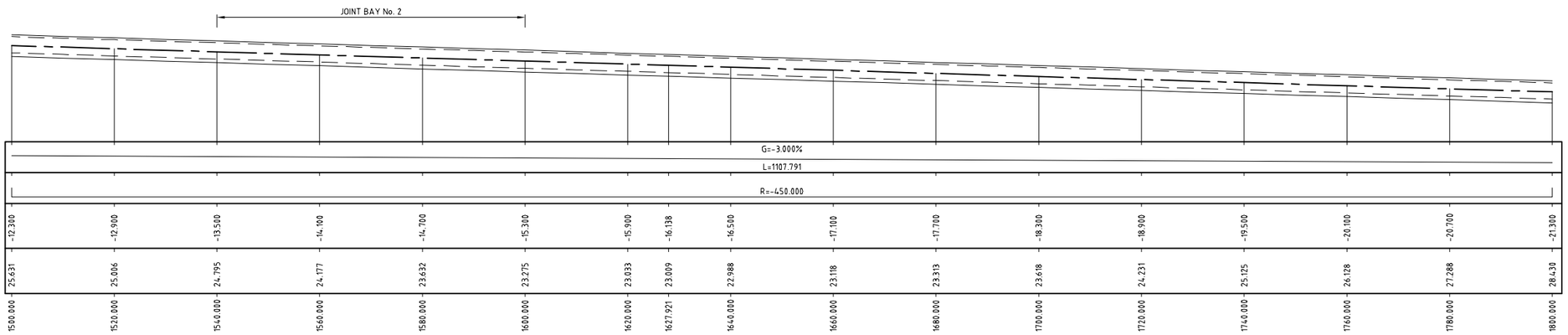
HORIZONTAL ALIGNMENT-CECT

SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.





LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
G	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
F	J.W.	19.10.10	VERTICAL ALIGNMENT AND JOINT BAY LENGTH AMENDED	A.V.
E	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.
B	J.W.	26.02.10	DRAFT CONCEPT DESIGN ISSUE	A.V.
			CHAINAGE REVISED & VERTICAL ALIGNMENT ADDED	

SCALES:

5 0 5 10 15m
1:500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

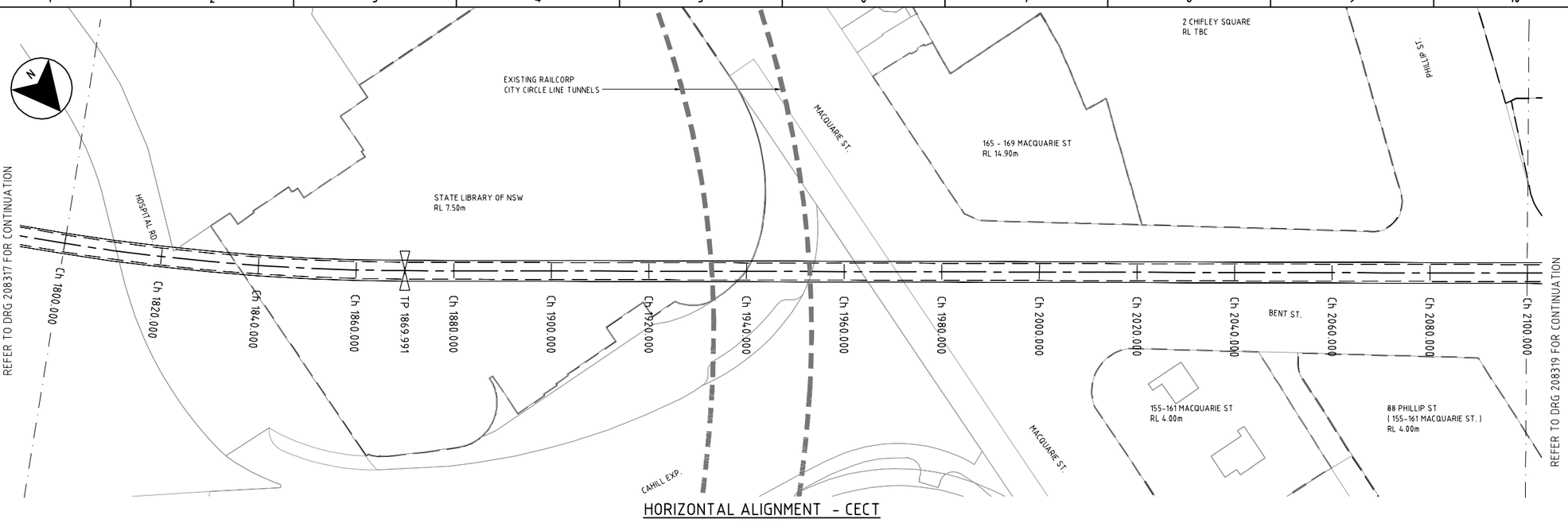
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

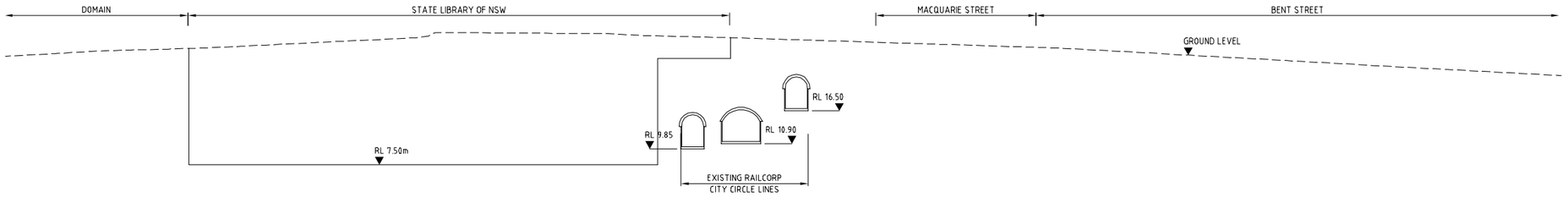
CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 1500.000 - Ch 1800.000

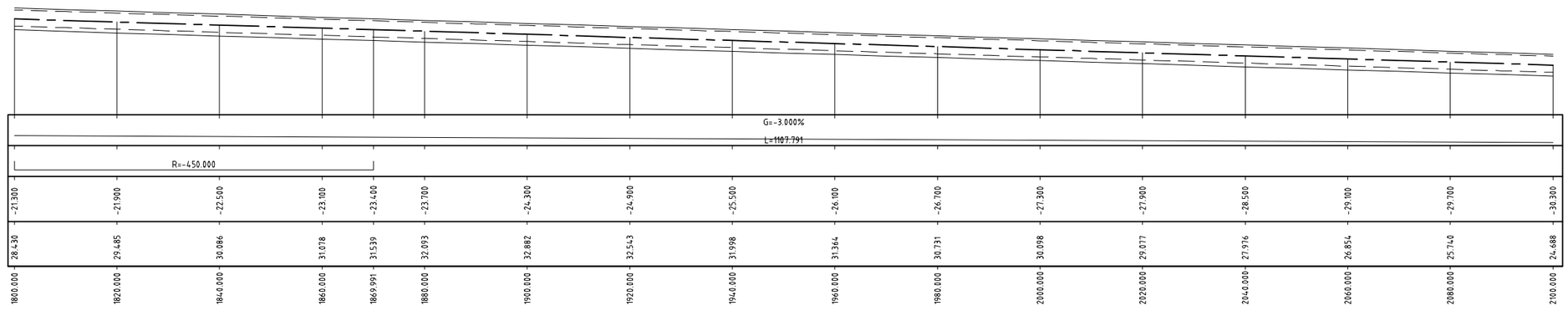
DRAWING No 208317 | SHEET 7 | AMD G | SIZE A1



HORIZONTAL ALIGNMENT - CECT

SCALE 1:500





LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

DATUM R.L. -40.000

VERTICAL ALIGNMENT

HORIZONTAL ALIGNMENT

CECT CONTROL LINE LEVEL

EXISTING GROUND LEVELS

CHAINAGE

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
G	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
F	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
E	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.
B	J.W.	26.02.10	DRAFT CONCEPT DESIGN ISSUE	A.V.
			CHAINAGE REVISED & VERTICAL ALIGNMENT ADDED	

SCALES:

5 0 5 10 15m
1:500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

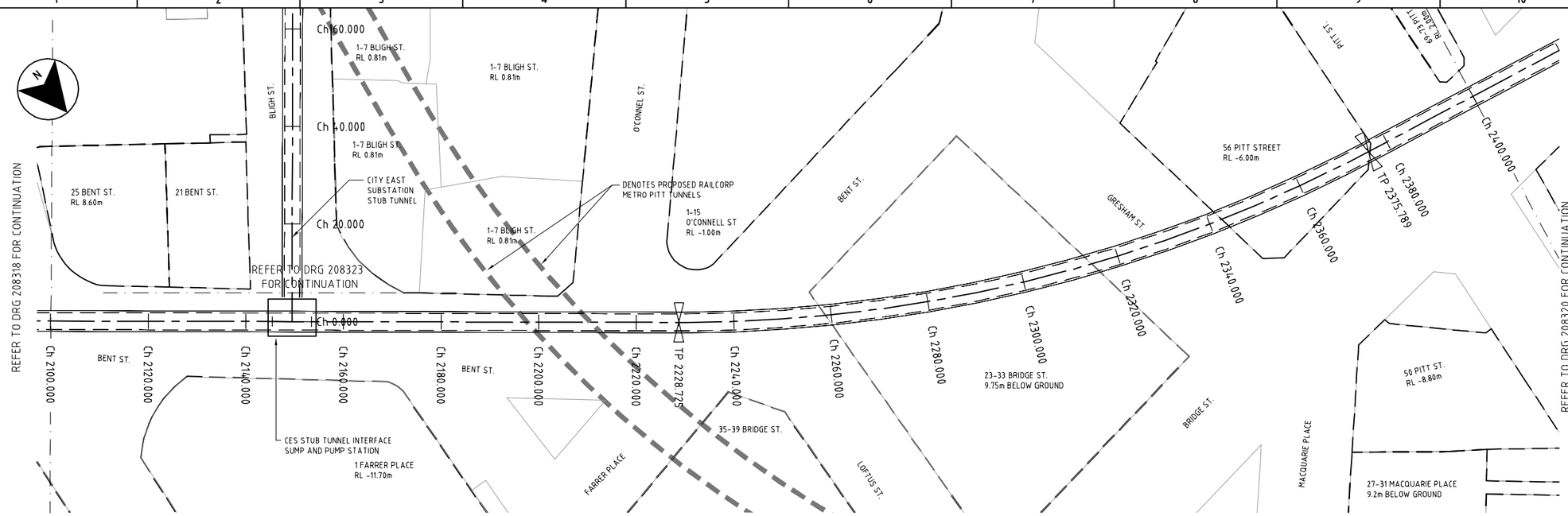
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 1800.000 - Ch 2100.000

DRAWING No 208318 | SHEET 8 | AMD G | SIZE A1

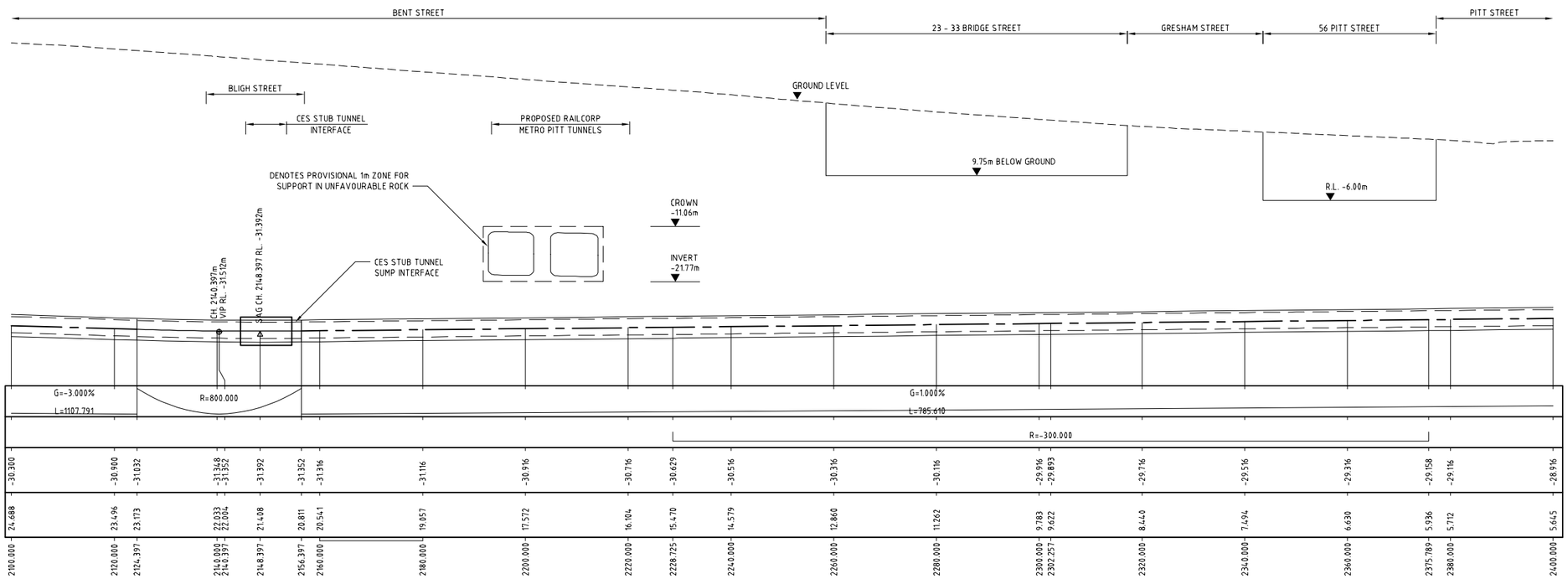


HORIZONTAL ALIGNMENT -CECT

SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOT FOR CONSTRUCTION

DETAIL DESIGN

No.	BY	DATE	DESCRIPTION	APPD
J	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
H	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
G	J.W.	12.10.10	ALIGNMENT REVISED	A.V.
F	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
E	J.W.	09.07.10	METRO PITT TUNNELS REVISED	M.F.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.

CAD DRAWING DO NOT MANUALLY AMEND AMENDMENTS

SCALES:

5 0 5 10 15m
1 : 500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

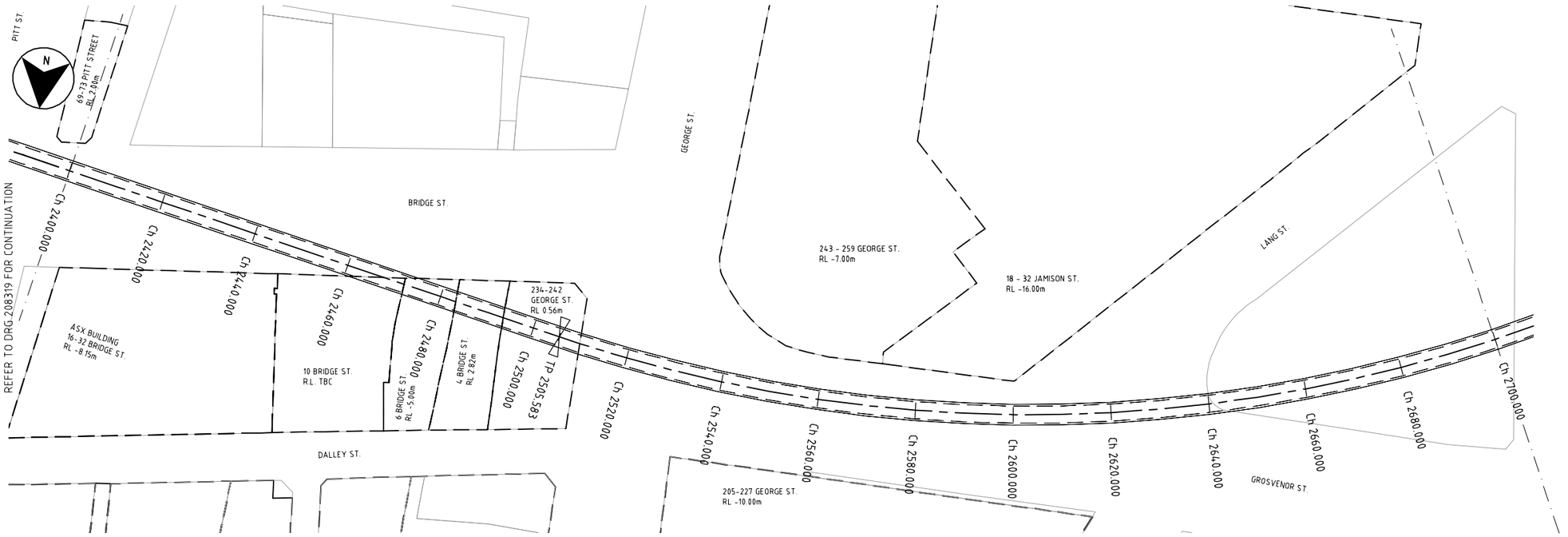
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 2100.000 - Ch 2400.000

DRAWING No 208319 | SHEET 9 | AMD J | SIZE A1

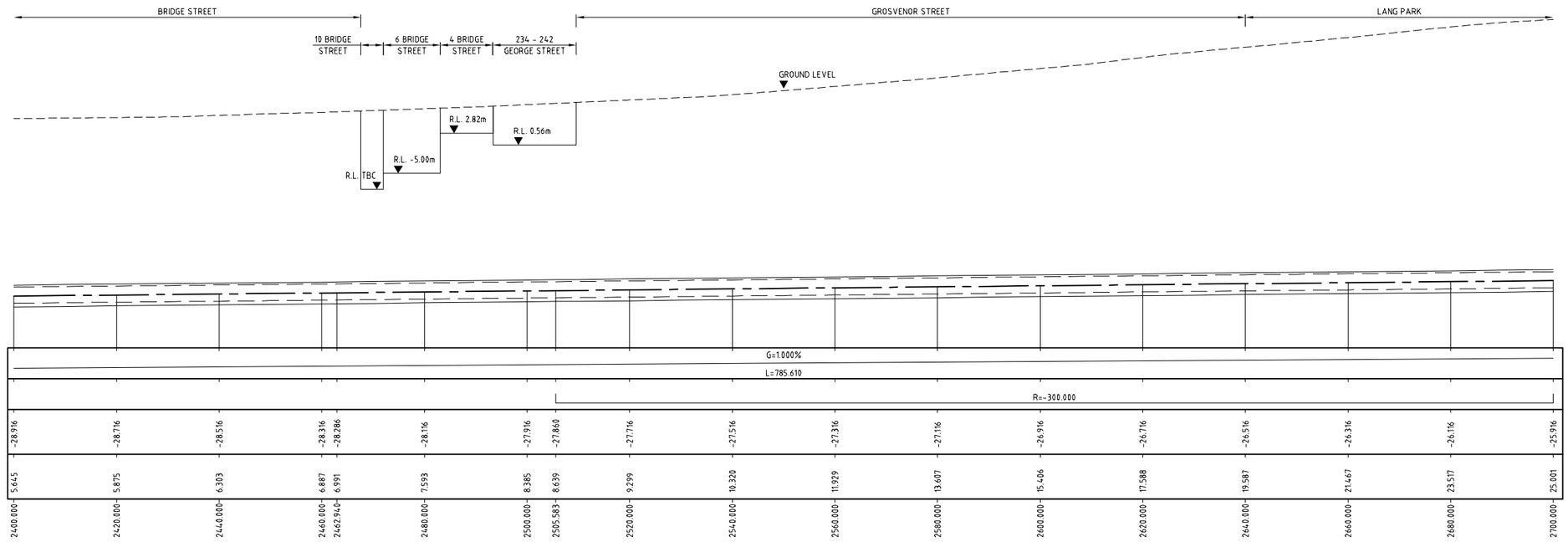


HORIZONTAL ALIGNMENT -CECT

SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

DATUM R.L. -39.000

VERTICAL ALIGNMENT

HORIZONTAL ALIGNMENT

CECT CONTROL LINE LEVEL

EXISTING GROUND LEVELS

CHAINAGE

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
H	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
G	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
F	J.W.	12.10.10	ALIGNMENT REVISED	A.V.
E	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.

SCALES:

5 0 5 10 15m

1 : 500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

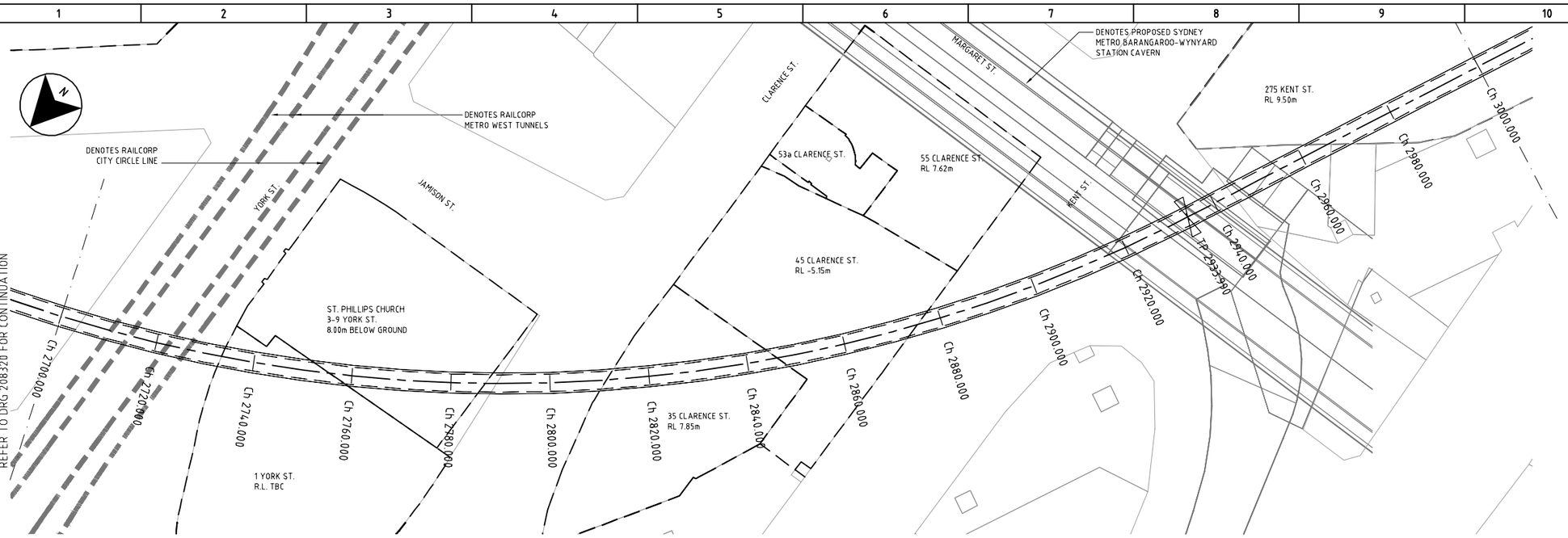
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

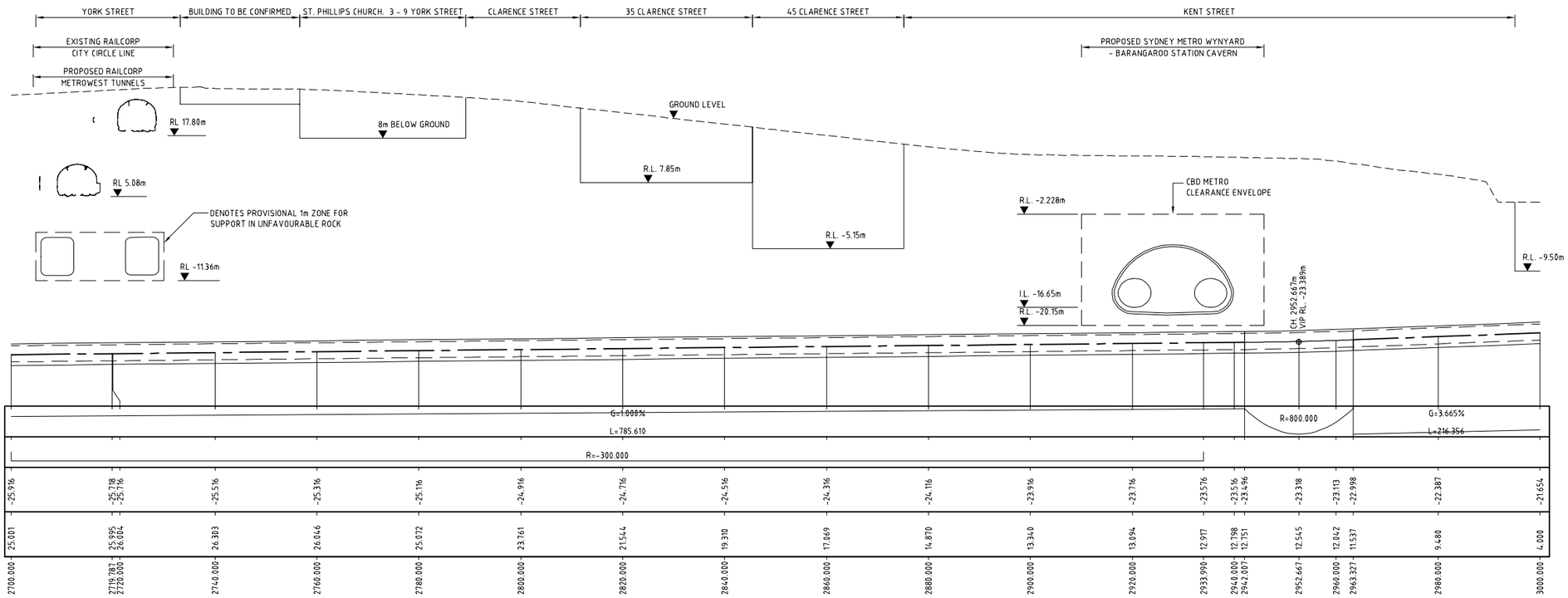
CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 2400.000 - Ch 2700.000

DRAWING No 208320 | SHEET 10 | AMD H | SIZE A1



HORIZONTAL ALIGNMENT -CECT

SCALE 1:500



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.
3. PROPOSED METRO 'T' OPTION SHOWN

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
J	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
H	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
G	J.W.	12.10.10	ALIGNMENT REVISED	A.V.
F	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
E	J.W.	09.07.10	METROWEST TUNNELS REVISED	M.F.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.

SCALES:

5 0 5 10 15m
1 : 500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

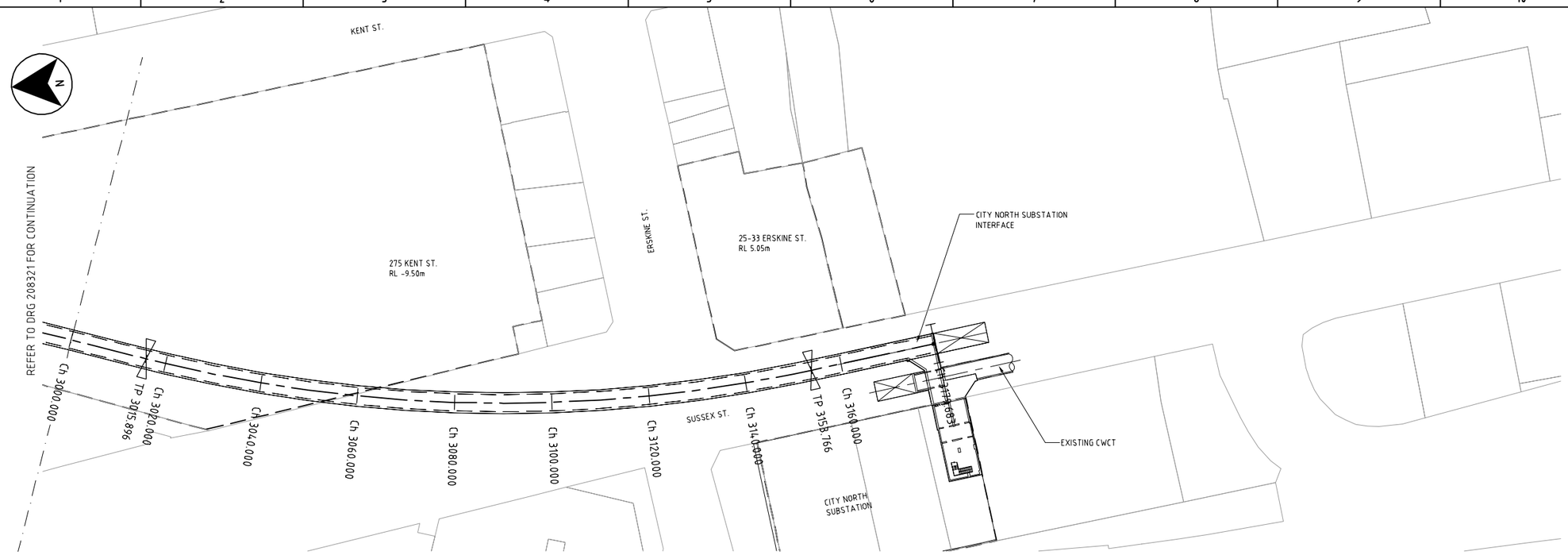
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 2700.00 - Ch 3000.000

DRAWING No 208321 | SHEET 11 | AMD J | SIZE A1

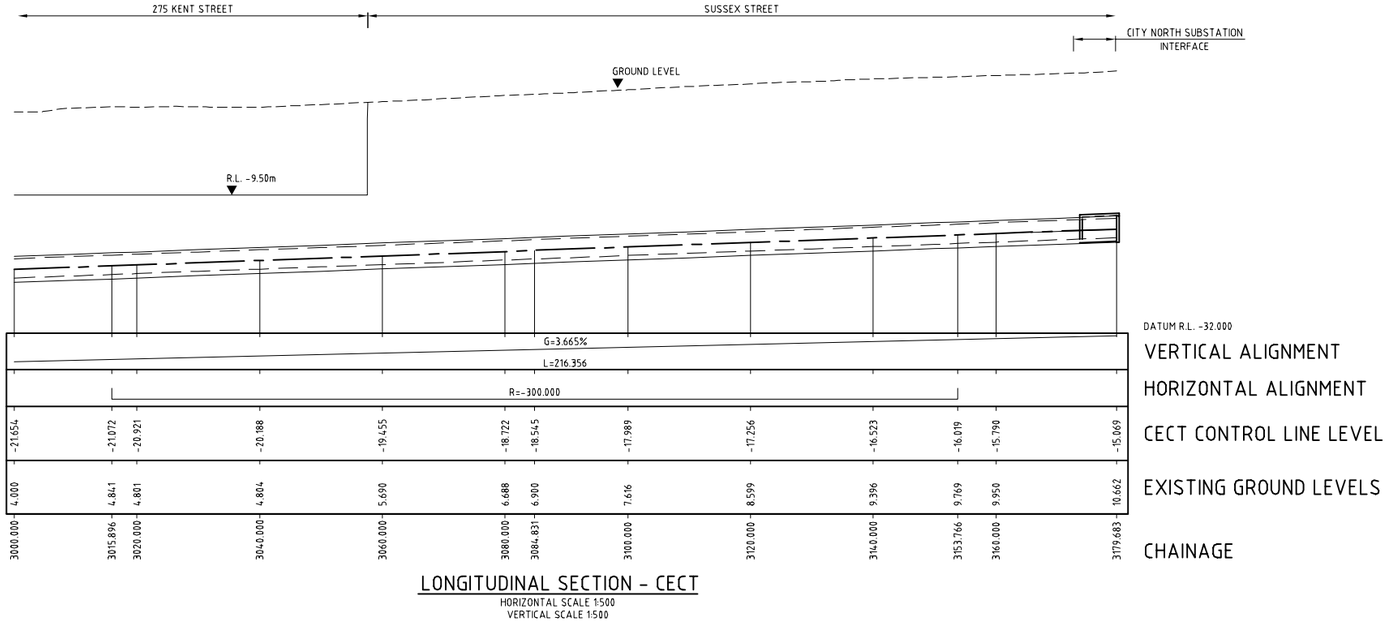


HORIZONTAL ALIGNMENT - CECT

SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.



LONGITUDINAL SECTION - CECT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOT FOR CONSTRUCTION

DETAIL DESIGN

No.	BY	DATE	DESCRIPTION	APPD
H	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
G	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
F	J.W.	12.10.10	ALIGNMENT REVISED	A.V.
E	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
D	J.W.	28.04.10	TUNNEL REVISED TO 3.5m I.D.	A.V.
			VERT. ALIGNMENT AND CHAINAGE REVISED	
C	J.W.	26.03.10	CONCEPT DESIGN ISSUE	A.V.

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

SCALES:

5 0 5 10 15m
1 : 500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

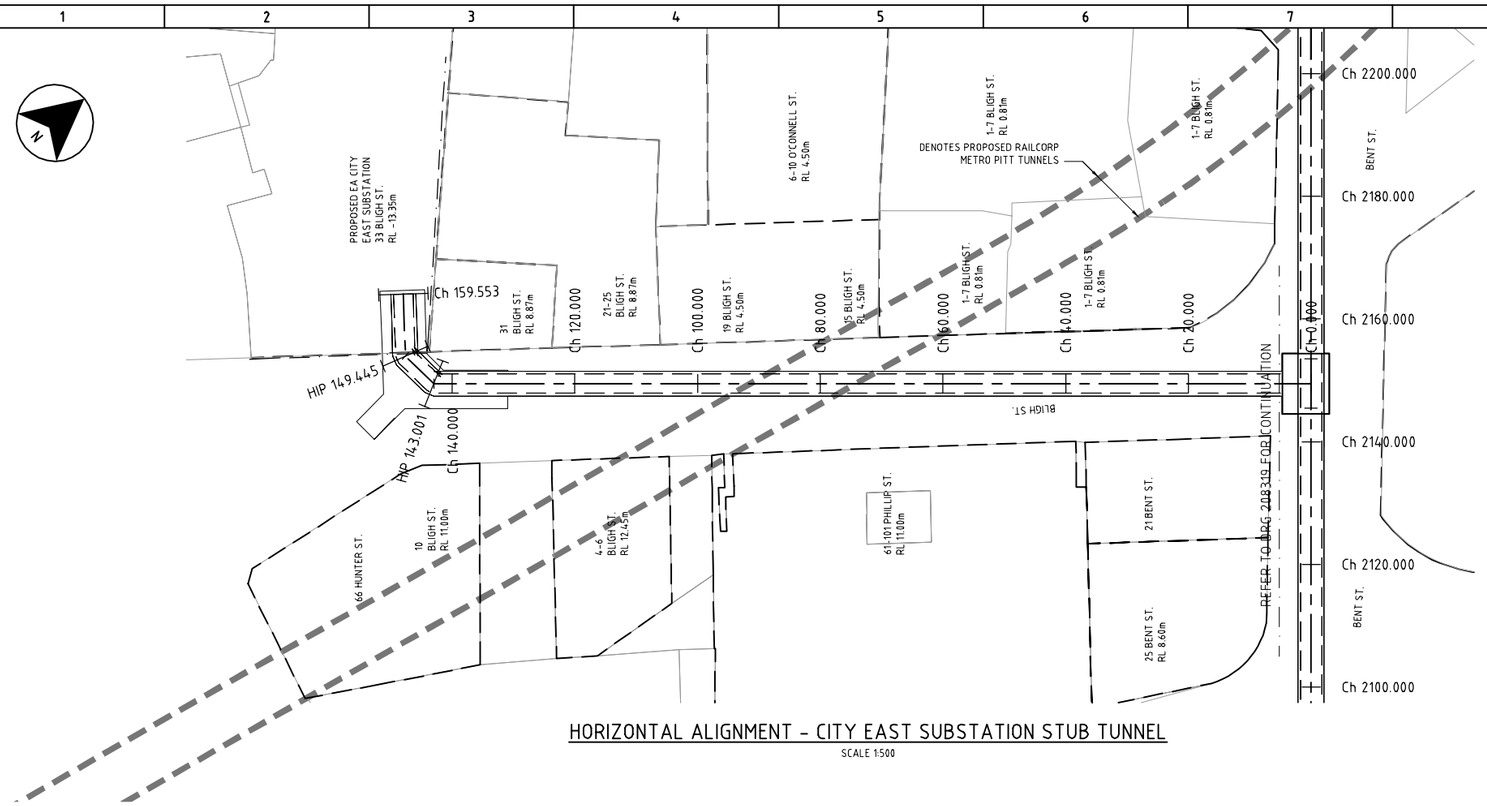
EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

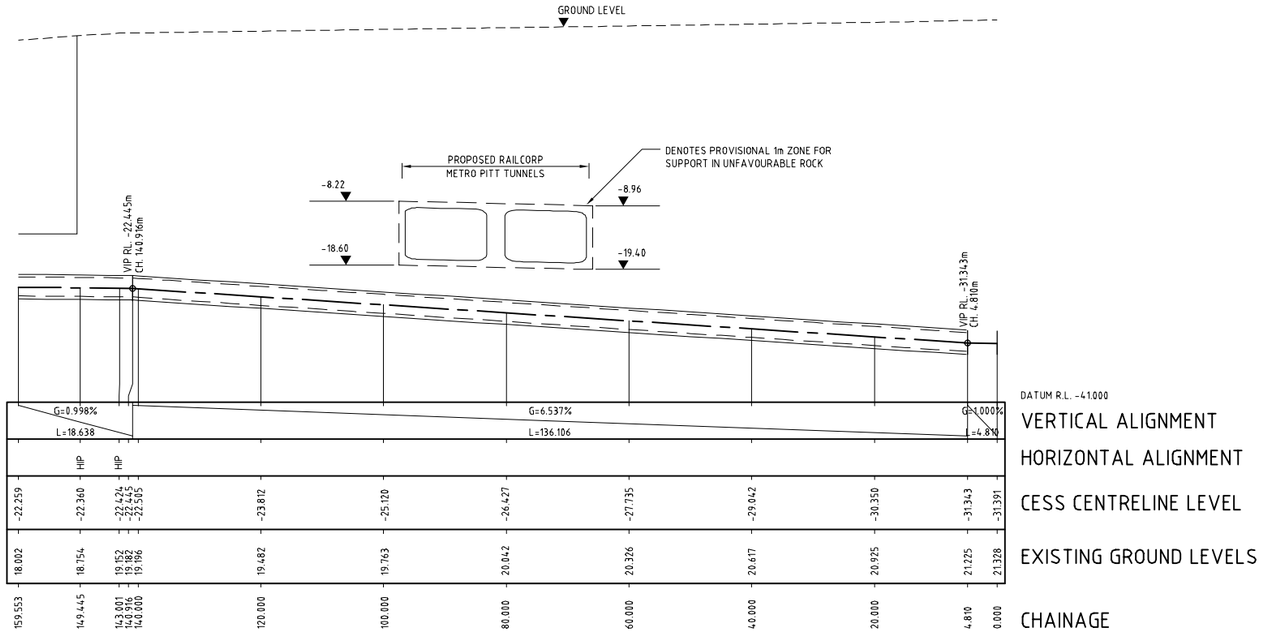
CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
TBM TUNNEL
Ch 3000.000 - Ch 3179

DRAWING No 208322 | SHEET 12 | AMD H | SIZE A1



HORIZONTAL ALIGNMENT - CITY EAST SUBSTATION STUB TUNNEL

SCALE 1:500



LONGITUDINAL SECTION - CEST

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:500

NOTES:

1. REFER DRG. 208289 FOR GENERAL NOTES.
2. REFER DRG. 208310 FOR TUNNEL ALIGNMENT INDEX SHEET.

NOT FOR CONSTRUCTION

DETAIL DESIGN

CAD DRAWING DO NOT MANUALLY AMEND

AMENDMENTS

No.	BY	DATE	DESCRIPTION	APPD
J	J.W.	23.12.10	DETAIL DESIGN ISSUE	A.V.
H	J.W.	19.10.10	VERTICAL ALIGNMENT AMENDED	A.V.
G	J.W.	12.10.10	ALIGNMENT REVISED	A.V.
F	D.L.	17.08.10	DRAFT DETAIL DESIGN ISSUE	A.V.
E	J.W.	22.07.10	SHAFT RELOCATED. DRAFT DETAIL DESIGN ISSUE	M.F.
D	J.W.	09.07.10	METRO PITT TUNNELS REVISED	M.F.
C	J.W.	28.04.10	TUNNEL PROFILE AND VERT. ALIGNMENT REVISED	A.V.
B	J.W.	26.02.10	DRAFT CONCEPT DESIGN ISSUE	A.V.

SCALES:

5 0 5 10 15m
1 : 500 FULL SIZE A1

DESIGNER:

AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT:

EnergyAustralia®

570 GEORGE STREET SYDNEY,NSW,2000
TEL: 02 9269 4200

SCALE	1:500
DESIGNED	M.FREWER
DRAWN	J.WHITE
CHECKED	J.ASHLEY
APPROVED	A.VENIOS
DATE	22.12.10
PRJTRK No.	
PROJECT NUMBER	60102986

CITY EAST 132kV CABLE TUNNEL
HORIZONTAL AND VERTICAL ALIGNMENT
CITY EAST SUBSTATION STUB TUNNEL

DRAWING No 208323 | SHEET 13 | AMD J | SIZE A1

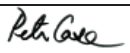
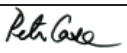
GHD

133 Castlereagh St Sydney NSW 2000

-

T: 2 9239 7100 F: 2 9239 7199 E: sydmail@ghd.com.au

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	N.Moore	P.Carson		P Carson		28/2/11