Executive Summaries
2011-2012 Bursary Vacation Placements in ‘New South Wales’

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I worked for Endeavour Energy in the Division: Network, Branch: Design Services and Team: Transmission Substation Electrical Design. My supervisor is Glen Parry who is Manager of Transmission Substation Electrical Design. My primary supervisors were Frank. M and Lucy. L, who are both specialist Senior Design Engineers. I had the greatest opportunity to have learned and gained valuable technical experience from Glen, Frank and Lucy during my stay in Transmission Substation Electrical Design. The experience in Transmission Substation Design allowed me to appreciate the responsibilities of what is expected of me, to becoming a professional Electrical Engineer in the power/energy industry.

I was able to learn so much in a short period of time. I was involved in amending several electrical drawings for various zone substations, using AutoCAD 2010. I was involved in Blacktown, Albion Park, Kandos, Kentlyn, Marayong, Mount Terry Transmission Substation, North Eastern Creek and Quakers Hill Zone Substations.

I was also involved in the re-design of an old manual drawing dating back from the late 1980’s during the Electrical Commission of NSW. I was assigned a design task to redraw this manual drawing into AutoCAD format. The re-drawing was for Mount Terry Transmission Substation, for a circuitry diagram of controlling a 132kV motor operated isolator within a specified bay, this can be seen in Appendix 1.

The most valuable and skilful thing I gained, was being able to link many electrical drawings together and having developed a good understanding of what happens electrically within each electrical drawings. This part of my experience with Endeavour Energy was most challenging but exciting and rewarding part, as it allowed me to investigate, learn and most importantly understand how a connection diagram, control & protection circuit diagram, protection & indication circuit diagram, control panel layout, termination diagram, schematic wire diagram, circuit wire diagram and many more diagrams are all tied and related to one another.

The position I undertook in Transmission Substation Electrical Design was definitely rewarding and exciting opportunity, to have achieved and learned so much valuable technical knowledge throughout my time in Endeavour Energy. Learning and gaining valuable technical knowledge related to substation design proved to be the most rewarding part of the experience to have achieved. Learning about the operation of SCADA, How a 52a & 52b switch operate, how a trip & close coil operate, how protection and control operate with SCADA to trip & close circuit breakers, how Voltage & Current transformers operate, how different types of protection relays monitor the appropriate currents & voltages within a substation and many more.
STUDENT: Andrew Palummo (UNSW)

COMPANY: Aurecon

On November 14th 2011, I began my summer work placement with Aurecon under the Australian Power Institute’s bursary program. Within the Energy Services business unit, I was positioned in their Transmission and Distribution team. This division is responsible for providing quality, technical services to a variety of public and private sector clients that is cost effective and sustainable for the environment and future generations.

My role as an undergraduate electrical engineer at Aurecon was to ask questions, learn as much as I can, take opportunities when they arise and get involved with as many different projects as possible. However, once I joined part of a project, I also became responsible for completing the tasks allocated to me on time. This provided not a sense of urgency but rather a level of importance and value regarding the work allocated to me which was welcoming.

Throughout my time at Aurecon, I was given countless opportunities to be a part of a wide range of projects. This included for example, the modelling of Earth Potential Rise (EPR) hazards on a recently relocated communications hut and mast owned by RailCorp. The new location for the hut and its earth grid was in close proximity to one of Endeavour Energy’s wood poles suspending a 66kV feeder with a downlead from its overhead earthwire. With TransGrid’s Ingleburn Substation only 700m away, there was a strong probability of violating EPR allowable limits. Thus, I created a model that included Ingleburn’s earth grid, the conductors of the 66kV feeder up to and past the pole of interest by ten poles, OHEW and respective downleads, calculation of a reduced fault current after considering the sequence impedances of the source supplying the 66kV bus at Ingleburn substation and transmission line up to the pole.

A more practical project that I had the opportunity to get involved with included conducting soil resistivity tests which the results would be used as inputs into soil models for earthing analysis. After sweeping the chosen site for any foreign metallic objects that may cause anomalies in our results, we hammered four electrodes of equal spacing into the soil. The outer electrodes inject current into the soil while the inner electrodes measure the voltage across a hemisphere with radius equivalent to half the spacing distance of the electrodes. This setup allowed us to measure the resistance of the soil at various depths and using a formula I learnt how to derive, we could calculate the equivalent soil resistivity.

Overall, my placement at Aurecon over the 2011/2012 summer has been constructive and very beneficial towards the development of my career as a young electrical engineer. Aurecon provided me with a vast scope of projects which provided the opportunities to challenge my engineering skills whilst developing my reporting techniques and communication skills. I’ve been able to apply theory we’ve learnt at university to real-world design problems. I’ve become more sufficient with modelling programs such as PLS-CADD and CDEGS which in turn has made me more familiar with the Australian Standards related to my profession.

I’m very pleased with the time I spent working at Aurecon and would recommend it to any undergraduate electrical engineer.
This report outlines my three month vacation placement at TransGrid’s Wallgrove office. I worked in Network Planning and Performance, in the Asset Performance subdivision.

During the summer, I have furthered my understanding of the asset management process, and I have gained an overview of the management of TransGrid’s assets and the measures of performance.

I was involved in several small projects and learning exercises. My main task was to prepare the Network Security Report which details the effectiveness of TransGrid’s existing security measures around it’s substations given historical security data. Beside this, I gained understanding of TransGrid’s relationship with the Australian Energy Regulator, and the incentives behind TransGrid’s reliability and availability targets. Furthermore, I was exposed to TransGrid’s outage management system, and the outage reporting procedures.

The understanding I have gained of TransGrid in general, it’s electricity transmission systems, the assets involved and the nature of the market is highly valuable and will further my progression into the engineering profession.

I would like to thank the Australian Power Institute and TransGrid for this development program.
STUDENT: Matthew Lee (USYD)

COMPANY: Ausgrid

For the period 12th December 2011 to 16th February 2012, I undertook work experience at Ausgrid under Wilma Penrose, and the Area Development team for CBD and Sydney East. Area development is a section in the Project Developments and Approvals (PD+A) branch, in the Transmission & Systems Operations (TSO) Division. PD+A is a relatively new branch that interacts with various other transmission branches within TSO, but more importantly is the link between the System Planning & Regulation (SP&R) Division by providing a means of communication for strategic decision making, design options and the network system planning for Ausgrid’s 132kV, 66kV and 33kV networks.

This report details the projects that I was assigned during the three month’s placement at Ausgrid. Throughout this period, I produced a substation component catalogue, a feeder 900 engagement study, City North digital display replacement options report and a busbar arrangement analysis.

Employees within Ausgrid tend to specialise in a few areas. Additionally, some divisions in Ausgrid do not require detailed knowledge of substation components and the electricity network. However, it is important that employees have at least a basic understanding of the electricity network, especially in PD+A, the intermediary department between TSO and SP+R.

The substation component catalogue was a project I was allocated. It was to provide a document, which outlines the various substation components for new employees joining the PD+A branch, as some employees did not have electrical engineering backgrounds as they come from other engineering backgrounds such as, mechanical, structural or civil disciplines. The project expanded rapidly and contains information on the electricity network and the catalogue is currently under review to be used as an Ausgrid-wide technical document - a ‘101’ guide for cadets, graduates and those with very little electrical experience.

While it was a bit difficult getting used to the Ausgrid reporting style and determining the roles of Ausgrid employees; there were no problems that I ran into that could not be resolved with help from Ausgrid employees, the Ausgrid intranet the Wire and the internet.

My time at Ausgrid helped to improve my report writing skills whilst following a company's template. I also gained valuable knowledge of aspects of the electricity distribution industry through writing the substation component catalogue. Consequently, I feel more knowledgeable and equipped in preparation for my graduation and future employment in the electrical utility industry.
From the period from the 5th of December 2011 to the 17th of February 2012, I was employed by Endeavour Energy as part of their Work Experience program. The purpose of this report is to provide detailed information about my experiences in working in a real world engineering environment, and also to show that I have acquired valuable knowledge and insight into areas of the electricity industry relevant to my placement, namely Transmission Mains Design.

During my placement, I was allocated to the Network Development Division, which is primarily responsible for designing, developing and building the transmission and distribution component of the business. Within this, I was placed in the Transmission Mains Design Group, which is in turn responsible for designing the overhead and underground construction of transmission services, that is, the distribution of electricity at voltages 33kV and above.

As part of my work, I was charged with a number of different tasks, including activities such as modelling the tensions on underground cable installations, the creation of electronic pole models, writing documentation and assisting with some of the many concurrent projects presently in the pipeline.

My work involved challenges such as gaining an understanding of how the design and development of high voltage electricity feeders is conducted. In addition, I also learnt much about the current issues relating to this work, concerning both technical and non-technical contexts.

In summary, through challenges faced and problems overcome, I can say with certainty that my placement at Endeavour Energy was an extremely worthwhile experience.
My placement with TransGrid for the period between 28/11/11 to 24/02/2012 was a highly valuable learning experience. I was placed in Capital Programs Delivery (CPD) based at 70-72 Commonwealth St Surry Hills. TransGrid is the owner of the NSW high voltage network whose role in the electricity network is to connect the generators to the distribution companies and major end users. The high voltage network covers 12656 kilometres of transmission lines through 91 substations [1].

The purpose of this report is to:
- Outline the projects and tasks undertaken during my placement and what skills and benefits I gained.

Many challenges arise in the design and delivery of a project for the transmission network. These issues range from aiming to stay within budget, to ensuring your values are safe and abide by the Australian Standard. My understanding of power engineering has benefited from this placement at TransGrid. Many concepts which were in my projects aren’t actually taught at university which shows there is so much more to learn in the power engineering world.

My main problem encountered was having the lack of knowledge required to initially understand the concepts related to my jobs. This was quickly overcome by simply asking fellow staff for an explanation or asking for reading material which can explain it. Another issue was learning how to run software associated with design aspects. This was resolved by simply reading the theory behind the software and the manual which outlines how it operates. The best lesson learnt is to ask questions when you do not understand; people are more than happy to help.

I highly recommend TransGrid to anyone who is interested in the NSW transmission network.
In the Summer of 2011-2012 I was placed in the asset performance group at Wallgrove, in the branch of substation systems. During my time there I gained valuable experience in the field of power engineering and my understanding of many technical areas of the industry improved immensely.

During my time in asset performance I gained an understanding of how TransGrid’s assets are monitored and maintained. I learnt a lot about the processes and procedures that are required to maintain a high level of quality and reliability in substations as well as in related areas. I also learnt about the manner in which these procedures are carried out. My understanding of the electrical network improved and I am now able to better understand how different aspects of the industry relate to one another. My communication and organisation skills improved a great deal and I became much more accustomed to working in a professional office environment.

My main tasks were mostly related to data analysis but I was also required to carry out a large amount of research as many of these tasks necessitated a thorough understanding of the topic at hand. As well as these projects, I also performed some programming in Visual Basic and researched some electrical phenomenon for various tasks.

I was also given a number of opportunities to travel out and see some substations. This gave me the chance to observe and understand all the working component of a substation. I was also able to observe some work being carried out and learn a great deal about the safety and technical procedures in place in order to perform work.

I have no doubt that the knowledge that I was able to gain from working this summer will greatly assist my learning at university over the next couple of years as I complete my degree. It was also valuable work experience for the future when I may begin work in a similar field of power engineering and I thank TransGrid as well as the API for offering me this opportunity.
During my three months of work experience in System Control, I have gained a good understanding of Ausgrid’s electricity distribution network and of the day to day operation of the Sydney Control Room. Being assigned to System Operations, I worked closely with Control Room Staff & Operators and participated in ensuring the smooth operation of the Control Room.

To assist the Control Room, I was involved with two main tasks. The first was to manage and analyse job life – cycle data. This involved collecting and analysing data of both cancelled and completed jobs that went through the Control Room. The second was to prepare the weekly Network Incident Report. This involved investigating unplanned interruptions and defective equipment on the network.

Other tasks involved auditing the Low Voltage Parallel Tracking System by liaising with Field Services. I also gained valuable experience in the field by assisting a District Operator (DOp), and was then able to apply that experience back into my main tasks.

The main challenges I faced involved extraction of data from various programs. By overcoming these issues, I have furthered my technical skills, in particular writing Visual Basic code.

Thanks to my placement, my communication and research skills have vastly improved, and will aid me in my future studies and career as an Engineer.

I would like to thank the Australian Power Institute and Ausgrid for this opportunity to develop my skills in an industry setting.
I undertook work experience with Ausgrid over the 2011/2012 summer vacation. This report details my work placement as an undergraduate electrical engineering work experience student. My position in the company was with the Maintenance and Replacement Planning Branch (M&RP) as undergraduate work experience technical analyst. The placement was held at Pymble office starting from 12th of December till the 17th of February. Prior to the commencement of this placement I was required to complete a two-week training course, starting from 28th of November till 8th of December. The activities carried out during the training are also reviewed.

Ausgrid is a state-owned Electricity Infrastructure Company and has the largest network in Australia. It was established on 1st of March, 2011, following the sale of its retail business.

The M&RP Branch is responsible for determining the maintenance, replacement and critical spares strategy for the electrical network, implementing the maintenance standards, as well as the development of the replacement/ refurbishment programs to mitigate network risk. Within the branch there are a number of sections. I was assigned to the substation section.

I was placed under Ron Inch- Operations Investment Manager. The following report discusses and details the activities I was involved with, outcomes, challenges faced, how I approached to solve these challenges and skills acquired. As this was a completely new section for me, there were many problems encountered and I faced many challenges. The challenges are also detailed in the following report.

During my placement I was assigned the following projects:

- Complete a Condition Risk Assessment (CRA) report on Clovelly Zone Substation
- Draft a Maintenance and Replacement Planning Advice (M&RP Advice) on the replacement of Lithium and Lead Acid intertrip batteries
- Review and update the Excel Spreadsheet used to monitor the maintenance effectiveness of field work graphs
- Review and update the procedure for running the maintenance effectiveness graphs
- Review the population data for Type A, B and C kiosk substations

I have also been able to gain an understanding of the equipment, including circuit breakers, isolators and transformers, in a substation and acquire an insight into their functionality/ role in the substation.

This placement has given me a greater depth into the field of power engineering as I have been able to better understand the electrical network, especially the requirements for the maintenance and replacement of Ausgrid’s assets. This placement has also enabled me to enhance my time management, excel, written and communication skills.
STUDENT: Daniel SHAN (USYD)

COMPANY: Ausgrid

As a work experience student in Ausgrid’s extensive Professional Development Program, I was given the opportunity to interact with engineering officers and graduates who assisted in my education and familiarisation of different protection schemes concerning the NSW distribution network. Being assigned to Secondary Systems Support, I participated in regular testing of all types of relays whilst developing an understanding of their specific deployment and assessment protocols.

During my employment I was exposed to a large number of relays which in the process of testing honed my practical laboratory skills as well as my protection theory. All relays on the network must be batch tested exclusively through this section. From the large, reliable electromechanical relays to the economic, multifunctional numeric relays, I developed an in depth understanding of each individual relay and its contributions to the network. Testing for approval involved physical inspections, insulation and electrical withstand tests and simulated functional testing for specific settings.

My placement allowed me to extend my expertise of practical skills not yet encountered during my university education but will surely benefit from in the future. This included familiarisation with standard testing equipment such as high potential meggers, power system simulators, oscilloscopes and various measuring devices. Before testing a new type of relay, an engineering officer always offered comprehensive theory and background to the relay which helped me identify what it was protecting, the schemes, grading, backups, previous failures, advantages and disadvantages compared to a similar relay by another manufacturer and even theory on how mechanical relays respond to sudden and gradual changes and associating the models used in their solid state counterparts.

The main hurdles encountered in this experience were minor and easily overcome with the assistance of my team and manager. The software used to install settings into numeric relays was different for every manufacturer and the test plan written for specific relays were often outdated and required some altering to perform functional tests with the simulator. Another problem was that some relays returned to laboratory due to failure, could no longer simulate the failure in the testing environment and it was a challenge to identify the cause of the failure before finally sending the product back to manufacturer.

In summary, I absorbed an outstanding amount of knowledge regarding the protection schemes and equipment on the distribution network. I am extremely grateful for the opportunity to expand my knowledge of protection theory through tangible exposure to an assortment of relays. I believe Secondary Systems Support is a unique experience giving behind-the-scenes insight into the power industry by providing an upfront contribution to the distribution network and honing important practical skills.
In the course of my 3 month employment at TransGrid’s (TG) Central Region Projects group managed by Tim Barnes, in the Major Projects (PO) division managed by John Hempstead, I gained experience working in the construction, site management of contract works and commissioning of high voltage transmission network plant and equipment.

The purpose of this report is to demonstrate that I have learnt and developed professional skills and gained valuable experience in the power industry.

At the Beaconsfield Substation redevelopment project, my tasks were to coordinate site conformance according to relevant safety and environmental rules, prepare a list of the existing West and new South Building Gas Insulated Switchgear (GIS) equipment labels and witness electrical and civil construction works.

In addition, I visited Sydney Park to inspect the construction of a water treatment system for the cleaning of a 3.8km long underground tunnel to Haymarket. I also visited the operational Haymarket substation to check equipment identification plates and visited Holroyd substation which is approved for construction. I was involved in a concrete panel inspection for the walls of the new North building.

Through those tasks I developed my technical and communication skills, as well as an enhanced safety and environmental perspective. The experience I have gained in engaging with this unique working environment involved in the power industry has further reinforced my enthusiasm and personal interest in power engineering as a career.

I would like to give my sincerest thanks to the Australian Power Institute (API), their sponsors and TransGrid for the opportunity offered over the 2011/12 summer vacation work placement.
Over the three month period I was employed at TransGrid, I have acquired a vast array of knowledge regarding the format and technicalities of the power industry. This invaluable understanding will undoubtedly assist in my studies and future prospects of my engineering career.

My position in the Network Planning and Performance division was a vacation employee in the Assets Performance group.

My main tasks over the course of my employment were studying the international standard IEC 61508 for safety related systems, investigating proposed projects and presenting the options to how it can be addressed in the form of option feasibility studies, performing calculations on the unavailability of communications links to confirm whether they comply with AEMO standards, and further calculations through a sensitivity analysis on network investments. Supplementary reading material was also provided to support these tasks.

I believe I am better equipped with my studies and career after the privilege of experiencing the power industry with TransGrid, as my skills in reporting, research, organisational and planning have undoubtedly enhanced.

I would like to extend my sincerest appreciation for the opportunities given to me by the Australian Power Institute and Partners and TransGrid presented during the 2011 – 2012 Vacation Engineering Student Program.
This report details the experience and knowledge acquired during the course of my 2011-12 summer vocational placement with Contract Cable Laying at Ausgrid; operating out of Homebush and Meadowbank depots.

Contract Cable Laying is a section within Distribution Operations and Reliability whose function is to oversee the provision of underground electrical distribution cables, up to and including nominal 22kV in Ausgrid’s supply area.

My focal position at CCL was as a Project Engineer and involved implementing and managing CCL projects undertaken by a Principal Contractor on behalf of Ausgrid. My responsibilities incorporated programming project durations; completing project estimates and variations; facilitating contract tenders; performing regular site inspections; instructing and monitoring the Principal Contactor, developing engineering solutions in conjunction various accredited parties; handling customer complaints; and attending weekly team meetings. These activities involved the utilisation of several tools including contracts, network standards, databases and underground plans and details.

Overall, the professional development experience with Ausgrid has given me an immeasurable amount of experience in power distributions engineering. The placement has developed my technical and practical understanding of a range of concepts and has highlighted the interdisciplinary nature of power engineering.
During the one month summer placement at Endeavour Energy’s Hoxton Park Field Service Centre my knowledge and understanding of the Australian power network and industry was developed substantially. Furthermore various skills learnt during this placement will be paramount in future studies in power engineering.

The department within the company that I had been placed was region services, which was mainly focused in the field of power distribution, although some aspects of transmission were also present. During the course of employment my position was a project officer.

During my short time at Endeavour I was able to become involved in various different projects with each presenting their own sets of tasks, learning experiences and difficulties that needed to be overcome. However all tasks were focused on aiding the other project offers in completing the project assigned to them, the manner in which this was done varied from becoming competent and using various pieces of software to access network information such as drawings to performing site inspections in order to determine the best course of action to be taken in regards to future works or the augmentation of present infrastructure.

Through my time at Endeavour Energy my knowledge and understanding of power distribution has grown significantly. Moreover my skills in the area of teamwork, communication and time management have also substantially improved. These skills and improved knowledge will be of the upmost benefit in completing further studies and gaining employment in the field of power engineering.
During my three month summer placement at Endeavour Energy, my understanding of the role of an electric utility in the power industry increased greatly.

My placement in metering development has allowed me to gain a vast technical understanding in smart metering and I was given several tasks relating to the smart meter trials that were being conducted.

I was involved in the monitoring, maintenance and planning of smart metering trials, which were used to test new smart meter infrastructure technologies that could be implemented by the company in the future. I conducted research and produced reports on neutral integrity issues, hot water heaters and off-peak hot water switching schedules, which were to be used for the trials. Another was to test home area network devices, which involved using requirements specifications and developing tests for new technologies.

The several projects that I have been involved in have allowed my report writing skills to enhance greatly, and I have increased my technical understanding of the power industry. My engineering skills such as project management and planning have also been enhanced, and I feel that the practical experience I have gained from this placement will benefit me immensely in the future.

I wish to offer my sincerest appreciation to Endeavour Energy and the metering development team for providing me with this placement and the great opportunity to learn and develop my skills as an engineer.
For a period of 11 weeks, I had been employed by Endeavour Energy to work as a vacation engineering student within the Strategic Asset Management branch of the Network Development Business Unit.

During the course of my placement I was involved with three projects which included analysing the defects within Endeavour Energy’s network to generate a trend of the quantity of defects which occurred across a certain period, performing data extractions related to the underground cables within the network to obtain quantitative information on the network, and investigating the expected effective life of underslung links as well as some of the incidents and defects affecting these switches. I have also undertaken site visits to several of Endeavour Energy’s substations, as well as defect inspections on some of the poles in the network.

Over the 12 weeks I’ve been positioned at Endeavour Energy I’ve gained an invaluable insight into the operations of the utility industry, especially in context of my technical understanding of power transmission and distribution. I have also developed skills in utilising database programs such as Microsoft access, ellipse database, and Microsoft excel, as well as the surveying programs including GIS, and Google earth. The experience I’ve gained in this placement have led to a better understanding of the role and responsibilities of a power engineer, and has put me in good stead with my university course as well as my career development in the power engineering field.
I was offered a vacation position with Endeavour Energy in the Network Asset Information branch from December 2011 to February 2012. This area is involved in coming up with new projects to improve the business and safety of their operations.

Endeavour Energy has maps of their power lines and other assets such as poles and cables. These are produced using a few different software programs such as GTechnology. Currently there are minimal details of other company power lines and my project was to find where other company lines cross Endeavour Energy lines. Most of these companies source their power from Endeavour Energy at high voltage. It is of safety importance to know where crossings exist because a line falling onto another of different voltage can electrocute workers at the connected substations due to excess load on the circuit breakers. I wrote a scoping document to determine on which maps this information was to be included, since it would be costly for software to be programmed to include a new symbol to depict crossings. I was able to locate crossings using information from existing maps such as where private poles are located and then used satellite images to view the actual lines. The major stakeholder for this information is the control room, which monitors the supply of electricity and can stop this supply in case of emergency. It is still to be decided on which maps control room needs to see these crossings.

The people in this branch were very friendly and supportive, and made working really enjoyable. I learnt lots about different software and the business processes that occur, and would like to thank Endeavour Energy for this great opportunity.
As an Australian Power Institute (API) bursary holder, I have had the opportunity to work as Project Officer and Project Manager during a vacation placement with Endeavour Energy’s Regional Services North. Throughout the placement, I encountered a number of challenges, both technical and financial. These included the technical challenges of distribution substation loading, and also the financial challenges associated with such a project. From a Project Officer’s role I have learned that technical standards must be met in the design, and from a Project Management position have found that spending on projects must be justified. The following report is a reflection of my invaluable learning experience obtained from working with Endeavour Energy.
This report details my vacation placement with Ausgrid from 28th November 2011 to 17th February 2012. I was placed with the Maintenance and Replacement Planning Branch (M&RP) of System Planning and Regulation Division at 5 Pymble Street, Pymble NSW 2073. The M&RP prepares sustainable, long-term maintenance and replacement strategies, develops standards for maintenance and replacement and overlooks the Duty of Care program.

Whilst positioned there, the branch manager placed me under the Mains group. The group expressed their need to prepare figures required for the regulatory submission, including asset replacement forecasts up to 15 years in advance. I was assigned the task of developing a life cycle costing model. Using the basis of Net Present Value, this model would be used as part of the financial evaluation of risk treatment options. By means of designing and delivering an Excel based evaluation tool, the group would be able to identify the costs of each mitigation option evaluated under each sub-programme of the regulatory submission. This model, produced from the tool, also required me to deliver a report format summary of results, detailing the preferred options. An operations manual was also produced, to guide the user through the data input requirements and how to effectively utilise the tool. To achieve this, I required an understanding of Ausgrid’s network, the roles and responsibilities of the M&RP Branch and an understanding of how the branch interacts with the rest of the organisation. This included gaining an understanding of the maintenance requirements analysis process and its role within asset management.

Along with experienced members of Ausgrid’s staff, I was also taken on a number of site visits to substations located in Clovelly, Flemington and Balgowlah North. These visits gave me the chance to become more familiar with the assets within Ausgrid.

The placement also offered me the chance to talk to experienced engineers about their work, on leadership, the industry and their advice to junior engineers such as myself.
During the two-month course of my placement at Endeavour Energy, I was placed with the High Voltage Testing section as well as the Protection and Control section at the Glendenning Field Service Centre.

Working in these two very different sections offered experience in a wide variety of tasks as well as ensuring that my time at Endeavour Energy was not a dull affair. Over this time period, I learnt many fundamental principles in ensuring the safety of workers and customers alike in the transmission and distribution of electrical energy over national electricity grid, detailed further in the report.

Furthermore, not only did I gain insight into the current state of the power industry and the future challenges it may have to overcome but physically being able to see the structures and equipment involved in power transmission and distribution helped solidify the content and material I had previously covered during the course of my studies at university.

I have felt that during this short period of time my ability to work in teams as well as my ability to think critically have dramatically improved. I attribute this to the professionalism and amicability of my co-workers.
Over the course of summer 2011-2012, I had the opportunity to work at Endeavour Energy’s Kings Park depot where I worked in different sections in Operations and also with the Design and Project management teams.

I gained an understanding and awareness on the network development and maintenance through experience and exposure with different crews in the Operations section: Underground construction, Overhead construction and Maintenance crews.

My main task with the design and project management team along with my colleague was to carry out preliminary investigations on blown fuses which were tasks passed down by our Project manager. We also had a chance to work on a project based on overloaded substations, where we developed a proposed solution to address the problem.

Through my field experience and the time spent with the Operations team, my awareness and understanding on the process involved in maintaining and development of the network has increased significantly.

As a result from working with the Design team and Project Managers, my technical understanding on a range of aspects in regards to power industry has increased. Carrying out initial investigations and having the opportunity to assist in several projects have developed my critical thinking process and decision making.

Overall, the knowledge and valuable experience I gained during my vacation placement at Endeavour Energy has helped me immensely to gain an understanding in the field of Power Industry.