O-BAHN CITY ACCESS PROJECT

CLIENT: DEPARTMENT OF PLANNING, TRANSPORT & INFRASTRUCTURE (DPTI)

MAGLANAS CONSULTING
Mawson Lakes Blvd Mawson Lakes, SA 5095 Australia

CONTACT DETAILS

Company Name: Maglanas Consulting Pty Ltd

Business Address: Mawson Lakes Blvd
Mawson Lakes SA 5095

Contact: **Simon Bredereck**
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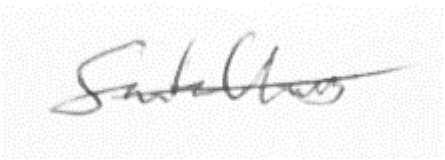
STATEMENT OF DECLARATION

This tender document has been prepared following a call to tender by DPTI. The following document and entailing quotations are subject to change throughout the tender period until a formal contract is finalised and agreed upon by both DPTI and Maglanas. This tender proposal prepared by Maglanas Consulting is valid for a period of three weeks following submission, after which the tender may be considered null and void at the discretion of Maglanas.

The members of Maglanas consulting do hereby declare the tender provided in this document to be accurate and truthful to the extent of our knowledge at time of tender submission and await your response.



Simon Bredereck
Project Manager

Liam Wegener
Assistant Project Manager

5 March 2017

Department of Planning, Transport and Infrastructure
77 Grenfell Street
Adelaide SA 5001

Dear Mr Mark Ellis,

RE: Call for Tender, Feasibility Study, O-Bahn City Access Project Adelaide

Maglanas Consulting would like to register an express interest in providing the Department of Planning, Transport and Infrastructure with a feasibility study focused on the improvement and development of O-Bahn access on Hackney road, to the eastern side of the Adelaide CBD.

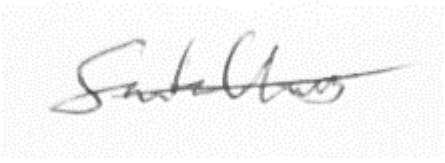
Maglanas Consulting is an Adelaide based civil engineering consultancy, providing expertise in several civil design areas to ensure completion of a vast array of projects over its years of practice. The company itself is comprised of 32 industry professionals with expertise in all areas of civil works and design including:

- Water Resource Engineering
- Urban Design Engineering
- Geotechnical Engineering
- Transport Engineering
- Environmental Engineering
- Structural Engineering
- Project Management

Maglanas Consulting would like to extend a quote to the effect of **$657,300.00 ($723,030.00 including GST)** for the completion of the feasibility study surrounding this proposed project.

The senior management of Maglanas would like to give thanks to DPTI for the opportunity to engage in this project in providing a tender, and look forward to continuing our relationship and communication with DPTI on this matter. If there are any queries or clarifications required in regards to this project/tender, please don't hesitate to contact our project manager.

Yours sincerely,



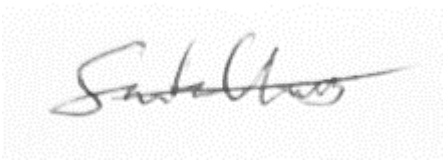
Simon Bredereck
Project Manager

DECLARATION IN RELATION TO UNLAWFUL COLLUSION

I, Simon Bredereck of Maglanas Consulting Pty Ltd, located at Mawson Lakes Blvd, Mawson Lakes, SA 5095 hereby declare as follows:

1. I hold the position of Project Manager within Maglanas Consulting (Tenderer) and that I am authorised to provide this declaration on its behalf.
2. I confirm that the tender submitted by the Tenderer is independent and that there has not been any unlawful collusion with any other tenderer or party in connection with this tender process. This clause does not apply to any formal joint venture contractual arrangement entered into between the Tenderer and any other person(s), the details of which have been provided to the Principal as part of the tender submitted by the Tenderer.
3. I confirm that the total value of the goods and/or services to be provided by subcontractors, to the extent known at the time of making this declaration, is $657,300.00 + GST, ($723,030.00 incl GST).
4. Where subcontract work comprises more than 25% of the value of this tender, attached hereto is a complete list of all sub-contractors, the value, and the nature of the work to be provided under each sub-contract, to the extent known at the time of making this declaration.
5. I understand that if any part of this declaration is found to be false the Principal reserves the right (regardless of any subsequent dealings) to:
   - Terminate negotiations with the Tenderer;
   - Terminate consideration of the Tenderer's bid; and
   - Terminate any contract between the Tenderer and the Principal in relation to the Project without any obligation on the Principal to make any payment to the Tenderer.

Note: If the tender is submitted jointly with another party or parties, each party must sign this declaration.



_____ **10/03/ 2017**

Simon Bredereck
Project Manager

Date

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1 CAPABILITY STATEMENT

1.1 Executive Summary

Since its establishment in 2007, Maglanas has established and maintained an enviable reputation in Adelaide as specialist collaborative consulting partners in the delivery of many major civil infrastructure projects. From an initial company of 8, we quickly grew to 32 employees after realising the potential at Maglanas. Our company now carries the necessary expertise, staff, management systems, qualifications and financial standing to undertake infrastructure based projects for the Government of South Australia with outstanding levels of quality, innovation and competence.

Employing industry leading professionals competent in all areas of civil engineering, Maglanas consulting continues to strive for excellence in all areas of practice. This enables us to provide our clients with peace of mind, knowing their projects will be carefully executed by those perfectly suited to the projects context every time.

We are confident in the abilities of this combined team to make a significant and valued contribution to the evolution of the design, buildability, safety, quality, programming and communication parameters of the project. Maglanas Consulting is enthusiastic about the opportunity to work with a state government department to improve key city services and we look forward to the prospect of working in collaboration with DPTI to expand the capabilities of the Adelaide transport system.

1.2 Company Values

The culture built within Maglanas is as diverse and vivid as the array of industry leading professionals under our employment. This positive and contributory culture is present throughout all departments of our business, down to interactions with subcontractors on the ground. Our staff recognise the concept whereby achievements through practice cannot be achieved without active commitment to upholding the values on which our company was founded.

Our professionals are united by the ideals of safety, collaboration, respect, honesty and innovation. From how situations and solutions are approached, to communication and negotiation with clients, our values define the very way in which we provide engineering solutions and engage in all associated works.

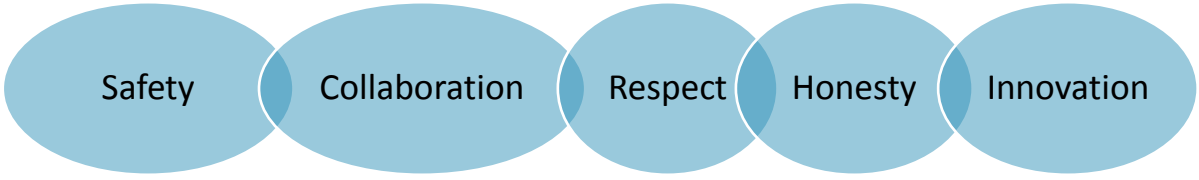
Safety
In all areas of our consulting operation, safety of the public as a result of our designs is our first and foremost priority

Collaboration
We work collaboratively with the wider Adelaide community on a government and residential level, whilst collaborating with other industry professionals to deliver the clients goals

Respect
We value the contributions, work and ideas of each individual in our sphere of influence to support and nurture the continued development of ideas to produce results

Honesty
We maintain a culture of honest communication and knowledge sharing amongst professionals in efforts to continue to maintain our solid standing in the industry

Innovation
We are committed to continuous improvement of all practices associated with our business to ensure we constantly allow clients of projects the widest selection of innovative design solutions



1.3 Company Capabilities

Following several years of consulting experience, our company can provide expertise in many civil engineering design areas, of which we strive to expand upon continually. Delivering key projects to Adelaide based tier one builders and the state government, Maglanas can extend our expertise to several project areas across the Adelaide region.

With staff members chartered in structural, geotechnical, traffic, water resources, seismic, environmental and general civil degrees, Maglanas can ensure all areas of the client's project are expertly designed.

The following list details our capabilities by engineering field:

Structural Engineering

- Structural design
- Structural analysis
- Tunnel design
- Bridge design

Geotechnical Engineering

- Geotechnical profile and surveys
- Footing Design
- Slope Stability Design
- Dam Design
- Retaining Wall Design (sheet pile, gravity, anchored, cantilevered)
- Borehole log Testing
- Geotechnical reports

Transport Engineering

- Traffic management
- Traffic flow analysis
- Transport logistic technology design and implementation
- Road and pavement design
- Roads with combined radiuses and raised platforms
- Pavement drainage design

Water Resource Engineering

- Runoff profiles
- Storm water runoff analysis and modelling
- Culvert design
- Storm water drainage design
- Reticulated water supply design
- Sewerage design
- Greywater use
- Irrigation systems design
- Wastewater treatment

Seismic Engineering

- Seismic analysis of structural elements
- Seismic restraints of structural elements
- Modelling and profiling of seismic interactions
- Geotechnical behaviour modelling

Environmental Engineering

- Air, water and soil quality management
- Waste mitigation
- Recycled materials use and green star certification
- Sustainable building practices

Urban Planning

- Prepare strategic plans for long term development and growth
- Land use zoning
- Project enhancement of and integration with local streetscape
- Stakeholder consultation to develop common vision for the area
- Provide studies before and after to compare impact of development

Maglanas is also known for an extensive network of management tools and techniques as part of the strong project management focus of our senior management. Working closely with all governing bodies, our company is also able to ensure collaboration is maintained with local councils, residents and all relevant stakeholders during a project to ensure successful delivery. Further expertise in scheduling, budgeting, quality assurance and administrative excellence will be provided to all projects regardless of size.

1.4 Financial Capabilities

Maglanas Consulting is a solid financial entity, built on sound financial management since its inception in 2007. With an annual turnover in excess of $10 million from projects that are as diverse in size as they are in scope, our business is in a stable market positon as we constantly expand our capability to undertake further works.

In the context of this project, we have over $500,000 in working capital as verified by our accounting statement below. This enables us to maintain an efficient project delivery whilst providing no risk to the industry and government in regards to possible diminished financial standings.

Our specialist financial department strives to constantly research market trends and look to innovative solutions, while our management staff maintain a solid standing in light of our history in the industry. This enables our consultancy to have the confidence to positively react to any opportunity that may arise whilst identifying risk and opportunity areas correctly.

Additionally, Maglanas Consultants has professional Liability insurance to the value of $100,000,000 as well as the appropriate business insurances associated with works of this scale.

We remain committed to utilising local products and expertise as much as possible in efforts to further support and grow the Australian economy. We have in excess of 30 full time staff which are based in the Adelaide region and we regularly sponsor community projects and sporting clubs. This can be seen in the attached Industry Initiative form.

1.4.1 Statement of Financial Resources

Maglanas Consulting Pty Ltd
Mawson Lakes, Blvd Mawson Lakes,
Mawson Lakes 5095 Australia

8 March 2017

Department of Planning, Transport and Infrastructure
77 Grenfell Street
Adelaide SA 5001

Dear Sir/Madam,

RE: Maglanas Consulting ACN 566 488 49– Statement of financial resources

I, Mr Nathan Cercone, as the Chief Financial Officer of Maglanas Consulting, have a full and comprehensive understanding of the company's current financial obligations and liabilities.

I understand Maglanas Consulting is submitting a tender for Feasibilty Study for consideration by the South Australian Government requiring less than $750,000 incl GST, available over the next 12 months.

Should this application be approved, this funding will support the proposed program of work and meet Maglanas Consulting obligations to the State of South Australia.

In my capacity as Maglanas Consulting's Chief Financial Officer, I confirm holdings of approximately 100% of the funding required to deliver the proposed work program.

Should this application be successful, Maglanas Consulting will be able to raise any additional funding required to meet the work program through an overdraft.

The State will note Maglanas Consulting's prior ability to successfully meet and fund its work program obligations, which I attach in support of this application.

Yours faithfully,

Nathan Cercone
Maglanas Consulting

1.4.2 Certificate of Currency

AICCORP

Ion Risk Services Australia Limited
ABN 16 000 454 740 ASFSL 231161

GPO Box 1065
Adelaide, SA, 5001

To Whom it May Concern,

In our capacity as Insurance Brokers to The Crown in Right of the State of South Australia, AICCORP we hereby certify that the under mentioned insurance policy is current.

As at date

06 March 2017

Policy Information

Policy type

Contract works – Material Damage, Public Liability

Insured

The Crown in Right of the State of South Australia, AICCORP, the Department of Planning Transport and Infrastructure, South Australian Water Corporation, South Australian Housing trust and all other Government (State and Local) Departments and Agencies, Commissions, Trusts, Companies, Corporations or other Statutory Bodies (whether as Principal, Project Manager, Adviser, Consultant or Contractor)

Insurer

Velocity Insurance Limited (Lead)

Policy Number

CTA056489525

Period of Insurance

From 5:00pm 1st March 2017 to 5:00pm 1st March 2018

Limit of Liability

Contract works $120,000,000.00 (or such higher limit that is shown in respect of any included referral contract)
Existing Structures $1,000,000.00
Public Liability $20,000,000.00

Territorial Limits

Anywhere in Australia, including cover for Insured Property whilst in storage and Transit

Jurisdictional Limits

Policy is governed by the laws of Australia

Summary of Cover

Public Liability

The Insurers will indemnify the insured in accordance with the basis of settlement, against harm succumbed to individuals of the public as a result of works occurring on site from a cause not specifically excluded, occurring at the site of the insured operations

1.5 Workforce Participation and Skills Development

At Maglanas Consulting we believe one of the real values our company has to offer the industry is through the development of skills of local people of all walks of life.

Part of our employment philosophy is to regularly take on undergraduate/graduate engineers to ensure the future of the industry. To support this, we have a dedicated mentoring program which accelerates learning and provides practical experience to less senior staff, enabling them to become a more integrated member of the Maglanas team. Additionally, we promote the development of all staff skills and seek to share experience with the wider community where possible through networking events and team building exercises held regularly. These events not only improve knowledge sharing but also promoting the collaborative culture we value at Maglanas.

We have a precedence to employ South Australians wherever possible, as this keeps knowledge and skills within local context. Our consultancy does however include interstate employment opportunities to develop and broaden our local knowledge base with the expertise and experience of professionals operating in varied locations and constraints.

In addition to this, Maglanas actively looks for opportunities to employ and develop training programs for trainees, displaced automotive employees, indigenous Australians and local public with barriers to employment. This is done directly through our work and in conjunction with other employers and programs that are run throughout the state.

1.6 Existing Expertise

Maglanas Consulting has been an important partner on numerous projects throughout South Australia since its establishment in 2007. These projects range from large civil infrastructure upgrades to smaller commercial developments. Each of our projects have provided a variety of challenges which our team has successfully overcome to provide effective outcomes for our clients.

1.6.1 Whyalla Regional Cancer Centre Redevelopment

Maglanas was engaged to provide engineering design work for the redevelopment of the Whyalla Regional Cancer Centre. This was a major investment in health in South Australia and a critical project to deliver on schedule. Our teams were involved in the structural design for all timber, steel and concrete used in the building upgrade, utilising both precast and insitu concrete. Careful consideration of all loading cases was undertaken due to the important nature of the hospital. Also due to the ongoing day-to-day function of the hospital, close co-ordination with staff was considered a critical aspect of the job.

1.6.2 Strathalbyn Water Resources Systems Design

Maglanas employed the latest computer modelling software to design water resources systems required for a large residential development located in Strathalbyn, South Australia. These systems included storm water collection and removal for both 1 in 10 and 1 in 100 year storm events. Our teams also designed the sewerage and water supply systems for the site taking into account different demand values for different times of day. The final design produced a water resources system which was both efficient and economical and was well received by our clients.

1.6.3 Seaford Rail Line

As part of the State Government's major investment into public transport, the Seaford (formerly Noarlunga) rail line was upgraded and reopened over the period of February 2011 – February 2014. This project involved the extension of the dual track rail line from Noarlunga Central Railway Station to the Seaford District, with associated station platforms, bridges and environmental conservation works. Maglanas was engaged to provide design work for station footings, retaining walls and bridge construction. Careful consideration of the environment was taken into account with the aim to minimise disruption to local wildlife and vegetation and to ensure safe travel for future passengers.

1.6.4 Saltlake Salt Plant Infrastructure Upgrade

The Saltlake project involved design work for increasing the collection capacity of the existing salt plant. Earth ramps are used to bring trucks above conveyors for offloading and processing. Our engineering teams were involved with the design for expanding the existing collection points while maintaining the operational capability of the existing plant over the course of works. The final design allowed for minimal disruption to the ongoing works, efficient structural and civil design and economic savings through the use of local suppliers.

2 COMPANY STRUCTURE

2.1 Project Organisational Structure

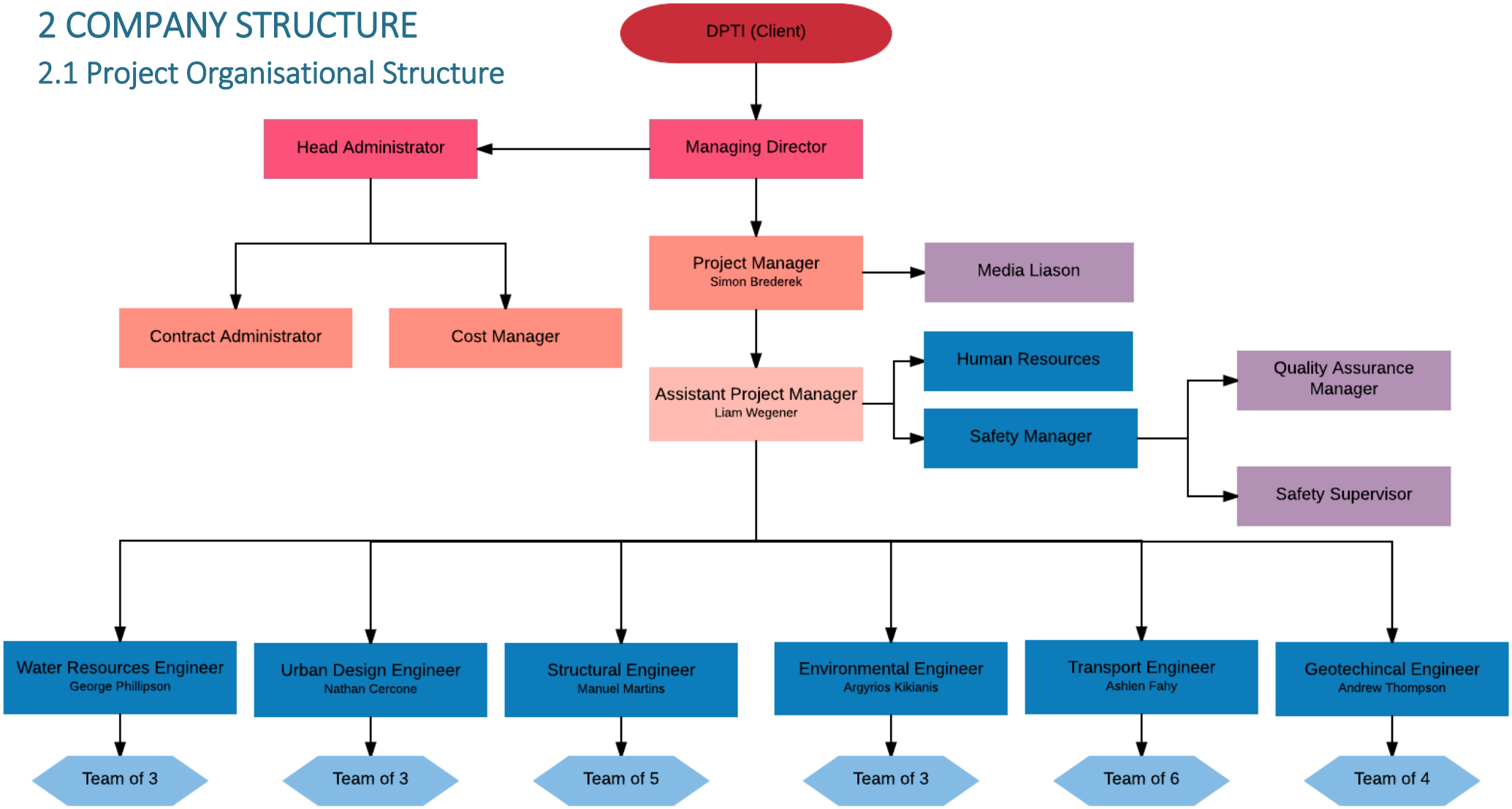


Figure 1: Project Organisational Structure.

2.2 Staff Profiles and Qualifications

2.2.1 Simon Brederek

Personal Details

Role: Project Manager

Years of Service: 10

Email: Bresj004@mymail.unisa.edu.au

Education

University of South Australia
2012 - Present
Bachelor of Civil Engineering, Transport (LHMI)

2008 - 2012
Advanced Diploma of Civil Engineering – Civil / Structural

Past Experience

2015-2017
DPTI – Bus Asset Management, Field Services
2015-2015
DPTI – Traffic Solutions Unit, Traffic Operations
2012-2014
DPTI – Asset Maintenance Unit, Metropolitan Region
2009-2012
TMK Consulting Engineers, Adelaide SA

Qualifications

- Safety Investigation Training, DPTI
- Contract Management, State Procurement Board
- Leading and Developing an Effective Team, IPAA
- Influencing Skills in Project Management, Project IQ
- Project Management, Project IQ
- Understanding Road Construction, CPEE
- Maintenance & Rehabilitation, CPEE

2.2.2 Liam Wegener

Personal Details

Role: Assistant Project Manager

Years of Service: 9

Email: Weglj002@mymail.unisa.edu.au

Education

University of South Australia
2013 - Present
Bachelor of Civil Engineering, Project Management (LBMI)
Research Papers: Ghana Water Management, Applications of WSUD Technologies and Project Management Case Studies

Past Experience

Hansen Yuncken - Project Coordinator/Site Engineer
2016 - Present
Quality assurance, administration, management, stakeholder management, procurement, site coordination, structural defects

Linear Roofing – Receptionist/Administrator
2012 - 2015
Administration duties, Payroll, Bookings, Invoicing, Contract negotiation, Dispute Resolution

Qualifications

- Certificate 2 in Public Safety
- UHF, VHF, GRN Radio Training
- Senior First Aid
- Construction Induction/White Card (SA)
- BIM360 Field Assurance Training

2.2.3 George Phillipson

Personal Details

Role: Water Resources Engineer

Years of Service: 9

Email: Phigy001@mymail.unisa.edu.au

Education

University of South Australia
2013 - Present
Bachelor of Civil Engineering, Structural (LHMI)

Marleston TAFE SA
2007
Certificate IV Residential Drafting
2008
Diploma of Building Design and Technology

Past Experience

Jim Wilson Pty Ltd – Consulting Engineer
2008 - Present
CAD Software use, Steel shop drawings QA, Building Inspections, Site level surveys, Dilapidation Reports, Office Duties

Qualifications

- Senior First Aid
- Construction Induction (SA)

2.2.4 Nathan Cercone

Personal Details

Role: Urban Design Engineer

Years of Service: 8

Email: cernj001@mymail.unisa.edu.au

Education

University of South Australia
2013 - Present
Bachelor of Civil Engineering, Structural (LHMI)

Past Experience

Lendlease Pty Ltd - Site Engineer
2016 - Present
QA collection, ITPS and O&M manuals, defect reports and site checks, drawing mark-ups, progress checks, commissioning reports

Qualifications

- Traffic Modelling Training
- Construction Induction (SA)
- QA Trained
- ITP Reporting

2.2.5 Manuel Ferreira Martins

Personal Details

Role: Structural Engineer

Years of Service: 9

Email: marmf002@mymail.unisa.edu.au

Education

University of South Australia
2014 - Current
Bachelor of Engineering (Civil) Honours (LHMI)
University of South Australia

Past Experience

Leed Engineering and Construction Pty Ltd - Undergraduate Engineer
2017 - Present
Quality assurance, environmental considerations, construction programs, cost reporting, production and construction tracking and programming, quotation preparation, administrative duties

Qualifications

- Construction Induction (SA)
- Senior First Aid
- WHS Practices Certifications
- Quality Assurance Trained

2.2.6 Argyrios Kikianis

Personal Details

Role: Environmental Engineer

Years of Service: 8

Email: kikay001@mymail.unisa.edu.au

Education

University of South Australia
2014 - Current
Bachelor of Engineering (Civil and structural) Honours (LHMI)
University of South Australia

Past Experience

FYFE Pty LTD - Undergraduate Engineer
2016 - Present
Dilapidation inspections, Site visits, Structural Drafting, Structural and Civil Designing, Weekly team meetings, Communicating with clients to organize inspection times

PT Design Engineering Consultants - Undergraduate Engineer
2016 - 2016
Site inspections, Administrative work, Structural and Civil Designing, Site meetings

Qualifications

- Construction Induction (SA)
- WHS Practices Certifications
- Senior First Aid Trained
- Quality Assurance Training

2.2.7 Ashlen Fahy

Personal Details

Role: Transport Engineer

Years of Service: 5

Email: fahaj004@mymail.unisa.edu.au

Education

University of South Australia
2014 - Current
Bachelor of Engineering (Civil and structural) Honours (LHMI)

Past Experience

Schiavello Construction - Undergraduate Engineer
2017 - Present
Contractor consultation, Quotation preparing, Administrative duties, Tender preparation, Document controller

Qualifications

- Construction Induction (SA)
- Competent with 12D Modelling
- Pavement Design utilising Computer Software
- Quality Assurance Training

2.2.8 Andrew Thompson

Personal Details

Role: Geotechnical Engineer

Years of Service: 4

Email: thoag002@mymail.unisa.edu.au

Education

University of South Australia
2014 - Current
Bachelor of Engineering (Civil and structural) Honours (LHMI)

Past Experience

City of Mount Gambier - Civil Engineer Assistant
2014 – Present
Storm water Design, Geotechnical Engineering, Road pavement Design, Structural Design

Qualifications

- Duke of Edinburgh Award
- Bronze Cross Award
- Senior First Aid Course
- Certificate of UniSA Environmental Awareness

3 COMPANY POLICIES

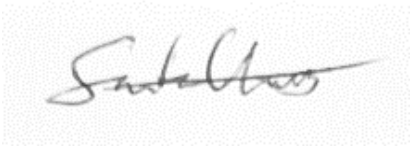
3.1 Environmental Policy

This policy establishes the framework to attain the best-in-class environmental protection systems. At Maglanas Consulting, we recognise that in our industry, the decisions we make today can seriously affect the environment and impact on the lives of people tomorrow. With global warming becoming a more serious issue for our planet, our commitment to protecting the environment we live in is stronger than ever. As such, in 2011 we initiated a 'Go-Green' environmental campaign aimed at significantly minimising the environmental impacts of our works. We developed a mindset where sustainable design is considered the future of engineering and we now aspire to be a leading organisation in environmental protection by delivering innovative and sustainable solutions which provide short term and long term environmental benefits.

To achieve our environmental targets, we are committed to:

- Maintaining our Environmental Management System certification to AS/NZS: 14001:2008
- Complying with environmental legislations and regulations
- Regularly reviewing and assessing our designs to ensure they do not adversely affect the environment
- Developing and incorporating unique solutions into our designs in order to achieve high green star ratings
- Empowering our employees to think outside the box and be creative with our solutions
- Utilising anthropogenic materials at maximum efficiency throughout a structures entire existence
- Reducing greenhouse gas emissions and pollution from all our operations
- Recognising and celebrating those who contribute to excellent environmental practices
- Minimising waste from our processes and where possible, recycling and reusing resources
- Comparing our performance against other leading environmental management systems
- Communicating this policy to all personnel to ensure they are constantly reminded of our commitment to the environment
- Meeting environmental targets whilst still complying with all our other policies

This policy is reviewed on an annual basis to ensure the company's needs are always met. Compliance by all personnel will guarantee that we achieve our environmental targets and this will set up Maglanas Consulting for long term success.



Simon Bredereck
Maglanas Consulting
7 March 2017

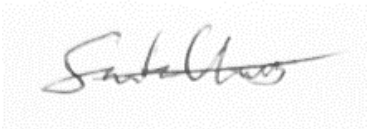
3.2 Work Health and Safety Policy

At Maglanas Consulting, the health and safety of all employees, contractors, clients, the community and other personnel affected by our works is given the highest priority. We empower our employees to take a people first approach when designing our solutions to ensure that health and safety is never compromised. This enables us to develop a culture where no business task is regarded as more important than the health of any one individual. Our Work Health and Safety Policy aims to prevent incidents and injuries throughout the life of the structures we design. Our dedication to safety in all projects together with our strong WHS Policy has been key to our company's success. We pride ourselves knowing that we are leading the way when it comes to safety in design.

To continue leading the way, we are committed to:

- Integrating hazard identification and risk management methods early in all stages of planning and design to eliminate or minimise the risks to health and safety throughout the life of the solutions we design
- Designing solutions which maintain structural integrity and effectively communicating potential risks and control measures to contractors, clients and key stakeholders
- Ensuring all personnel affected by our works are provided with a safe working environment
- Immediately calling a stop to all site work if a safety compromise is identified in our designs
- Empowering all personnel to act if they notice a compromise to safety in our designs
- Reporting, investigating and resolving unexpected incidents immediately and implementing effective strategies as soon as possible to eliminate the probability of reoccurrence
- Reviewing this policy regularly to promote continuous improvement of our safety management systems
- Understanding work activities associated with not only the structures we design, but also with construction methodologies
- Recommending alternative designs to eliminate risks associated with original designs
- Regularly letting all employees know that it is everyone's responsibility to provide a safe working environment for not only themselves, but others affected by our works
- Ensuring all personnel affected by our works adhere to this policy and comply with all relevant legislations, regulations, standards and codes of practice
- Training our staff to give them the knowledge and skills required to develop safe designs

It is of upmost importance that this policy is adhered to no matter the circumstances. We are committed to continuously communicating this policy to ensure all personnel are constantly reminded of how we conduct business safely at Maglanas Consulting.



Simon Bredereck
Maglanas Consulting
7 March 2017

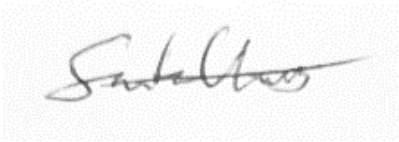
3.3 Quality Assurance Policy

Our Quality Assurance Policy aims to consistently produce high quality cost-effective solutions and services in all areas of our business to maintain our reputation for delivering excellent customer satisfaction. Our employees are driven and determined to develop solutions that exceed our client's quality targets and expectations. To guarantee quality products, our team checks every aspect of our designs including production and installation. This is an integral part of how we do business at Maglanas Consulting, past and future, this method will always be maintained. Feedback previously received from clients highlights their contentment and further encourages and motivates our engineers to continue delivering quality solutions in a timely and cost-effective manner. These valuable lessons learned are always meticulously studied and discussed as a team to ensure future projects achieve the highest quality possible.

To achieve our quality aims, we are committed to:

- Maintaining Quality Management System certification to AS/NZS ISO 9001:2008
- Ensuring all our quality systems remain fully accredited and thoroughly inducting all employees to make them aware of our quality processes
- Complying with quality management standards and codes of practice
- Integrating strict quality processes into all stages of our projects and working collaboratively with our clients to ensure they are satisfied with the quality of our solution at every phase of the project
- Employing personnel who are motivated and qualified to achieve our quality goals
- Regularly monitoring and reviewing our quality management systems and processes to suggest new ideas that continually improve our performance
- Supporting the conformity and certification assessment by conducting quality checks through regular internal and external third party audits.
- Constantly reminding all personnel of our Quality Assurance Policy to ensure we are always developing the most outstanding solutions and services for our clients
- Developing an action plan within 24 hours of discovering a non-conformity. All non-conformances will be closed out within 14 days.

The quality of our designs shall never be compromised regardless of the situation. It is essential that this Quality Assurance Policy is understood, implemented and successfully maintained throughout all areas of our company.



Simon Bredereck
Maglanas Consulting
7 March 2017

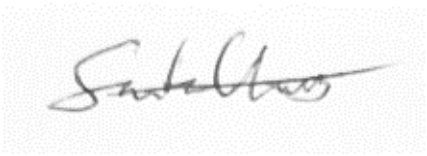
3.4 Stakeholder Policy

The concerns, interests and needs of our stakeholders play a vital role in the decisions we make. We never follow through with decisions that adversely affect our stakeholders without prior communication or their approval. When working with Maglanas Consulting, you can rest assured that we will understand your needs and you will always have our communication and support.

To stay true to our Stakeholder Policy, we commit to:

- Working collaboratively with all stakeholders throughout the entire life of the project to keep them informed and make variations to programs, designs and processes based on their concerns. Particular interest is given to matters that affect health and safety, the environment and the community
- Ensuring that our stakeholders are aware of, and understand, all issues associated with our products and services
- Dealing with our stakeholders in an ethical manner through open and honest communication
- Actively seeking different perspectives from our stakeholders to broaden our understanding of the task at hand and guide our decisions

Our Stakeholder Policy forms another key part of the foundation for which all our works are conducted. We therefore ensure that this policy is continuously communicated to our employees to guarantee we are always providing our stakeholders with the attention they deserve.



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Maglanas Consulting
7 March 2017

4 PROJECT OVERVIEW

4.1 Study Area and Apparent Concerns

The proposed O-Bahn extension from its current southern end on Park Terrace to the terminus located toward the western end of Currie St in the city of Adelaide is broken up into three stages. The study area of this tender is limited to Stage One, that is, from Park Terrace in Gilberton and along Hackney Road to the intersection with North Terrace and Botanic Roads in Hackney. Due to a further continuation of the route in subsequent project stages we will assume this in our designs for the Hackney Road / North Terrace / Botanic Road intersection. Figure 2 shows a visual representation of the study area. Note that the areas surrounding Hackney Road will also form part of the study area as our works will have the potential to affect the wider community and environment.

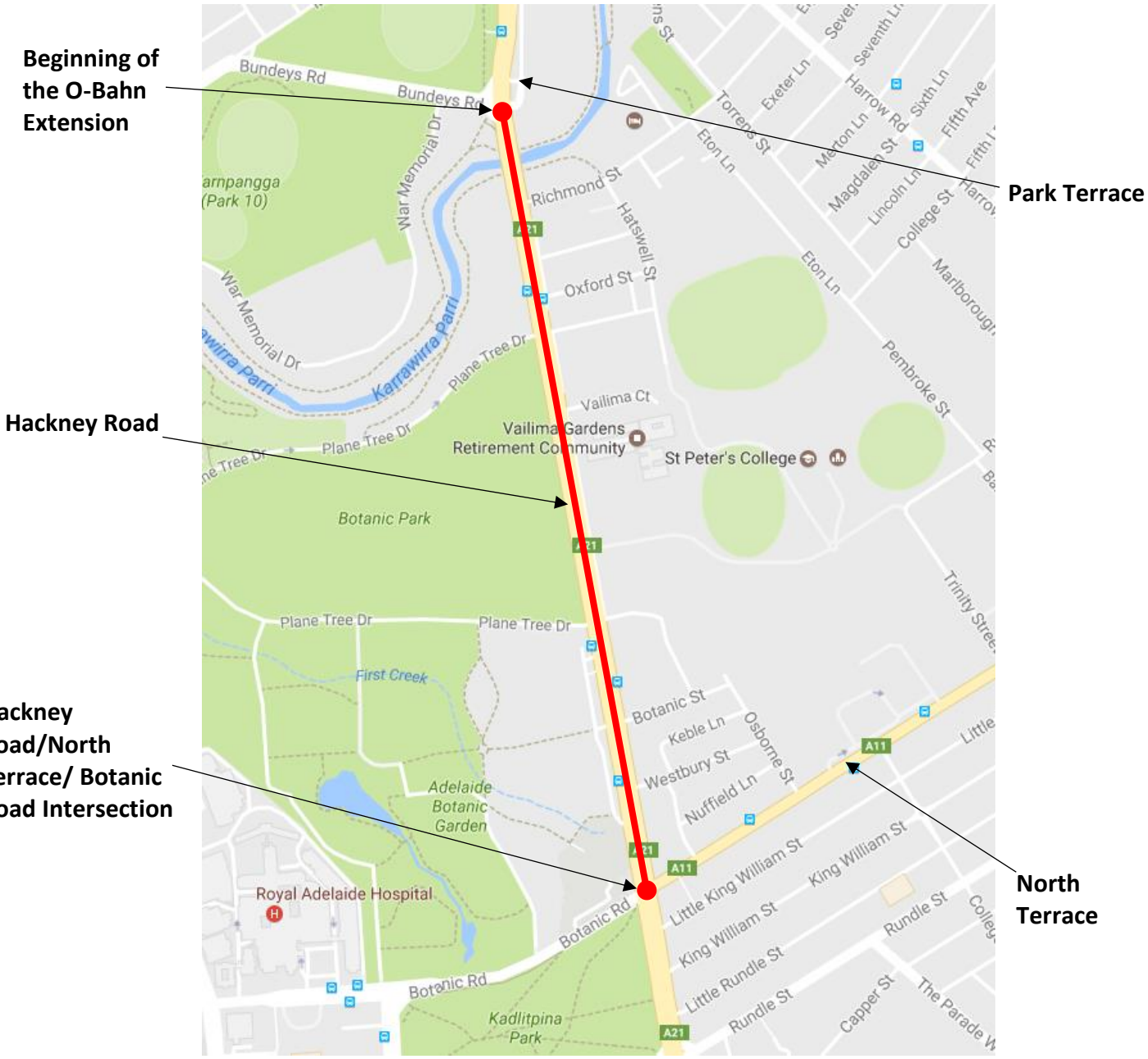


Figure 2: Study Area - Stage 1 of the O-Bahn City Access Project.

The team at Maglanas Consulting is experienced firstly at identifying risks and then providing practical solutions for our customers. In regards to this project, it can be seen that there are numerous areas of concerns which are easily identified prior to the detailed research carried out. Some of these are;

- The projected future traffic volumes and demographic changes that will increase congestion on a currently saturated peak flow. This will have a negative impact on a majority of stakeholders if no remedy is provided, however the current situation must be investigated to provide a 'base case' for subsequent studies
- Environmental concerns when conducting work around natural watercourses, such as the Torrens River, must be clearly identified. Maglanas prides itself in not only having the ability to clearly identify and understand these concerns, but also uses the opportunity to provide improved designs while construction work is being carried out and long after it has finished
- Maglanas are aware that much of the site has Heritage concerns associated with it, from century old bridges to the Adelaide Parklands. We have a proven track record for maintaining public confidence around such items.
- Urban Planning is another major factor in design. Maglanas not only recognises that there are numerous stakeholders involved and that many of their goals are constantly evolving, but we also provide superior advice in order for each stakeholder group to move forward.
- Safety is a key concern and must be considered the foremost priority in design. Maglanas is focussed on providing safe infrastructure for all users, whether they be public transport commuters, private and commercial vehicle drivers, cyclists, pedestrians, residents or construction workers.

Maglanas Consulting are excited by the opportunity to effectively deal with the many challenges this stage provides in order to provide a safer, more efficient and environmentally friendly solution.

4.2 Stakeholders

In submitting this tender Maglanas Consulting recognises there are many of stakeholder groups involved in this project. While the majority are listed below, it is likely that more groups will arise once the Feasibility Study has commenced. This is not uncommon in our experience and we treat all concerns and opinions raised as valid and worthy of consideration by each group.

Maglanas continually seeks to engage with all stakeholders in order to provide suitable options with no surprises when it comes to construction or end use.

Identified Stakeholders:

- Federal Government
- State Government
    - Department of Planning, Transport and Infrastructure (DPTI)
    - Department of Treasury and Finance
    - Department of Environment, Water and Natural Resources (DEWNR)
    - South Australian Tourism Commission
- Local Government
    - The City of Adelaide
    - City of Norwood, Payneham and St Peters
    - Town of Walkerville
- Local attractions
    - Botanic Garden
    - National Wine Centre
    - Adelaide Zoo
    - Annual Festivals
    - Clipsal 500
- Local Community
    - Residents living along or with access to the corridor
    - Local businesses along or service by the corridor
    - Schools, in particular, St Peters College
    - Retirement Villages
    - Local sporting or health groups that use facilities in the area
- Commuters
    - Public Transport
    - Private vehicles
    - Commercial Transport
    - Cyclists
    - Pedestrians

5 PROPOSAL FOR FEASIBILITY STUDY

5.1 Introduction

Below are the major objectives in the redevelopment of Hackney Road. By implementing solutions that can fulfil these requirements, this project could effectively improve the flow of traffic and public transportation along Hackney Road.

1. Increased traffic flow along Hackney Road for motorists
2. Quicker travel times for busses
3. Ensuring no disturbance to heritage areas or any environmental damage
4. Implementing strategies that can also assist in improving Botanic Road/Hackney Road intersection congestion
5. Ensuring solutions have a good benefit to cost ratio, i.e. for the money spent, there is plenty of improvement to the current setup

Firstly, objectives 1 and 2 go hand in hand. For the many people commuting to the city, who drive in every morning, it would be beneficial to have better car flow in accordance with bus flow. There would be no point in improving the buses travel times without improving the travel time for public motorists.

Secondly, objective 3 is a requirement that all projects should meet as it's highly sensitive in the community. Not only should areas be well researched on their importance, but clearing large areas of natural land should not always be considered the best option when considering the most effective practical solutions to any project.

Although the scope of this project only involves the design of Hackney Road, it's still crucial to consider factors that lie just outside of the scope, in this case the Botanic Road/Hackney Road intersection. It would be beneficial to implement a solution that only improves the traffic flow along Hackney road but also through into the intersection as this could drastically improve bus travel times.

Lastly the final objective is the most important to ensure that the most ideal solution to this project is financially beneficial. Solutions can tend to be quite expensive and therefore it's ideal that after spending such money, the implemented strategy delivers in bringing large benefit. Otherwise if this is not the case, then nothing should be changed and the money should not be spent.

After analysing the above project objectives, three possible solutions were considered, each with the potential to satisfy such objectives. These include utilising a third bridge as either an overpass, underpass or an extra bridge running parallel to the two current existing bridges.

5.2 Proposed Options

5.2.1 Assumptions

Maglanas Consulting foresees the following as assumptions for the proposed solutions:

- Peak hour traffic periods each day along Hackney Road and Park Terrace, could interfere with road works
- Unknown services will be present when installing footings for bridge and overpass
- Overhead wires will be present during construction
- Dilapidation and safety reports are needed prior to and after construction
- Noise produced from machinery must be kept to a minimum due to residential areas
- Night works will be present to minimise impact to peak hour traffic
- Delivery of materials will affect traffic

5.2.2 Option 1 – Overpass

5.2.2.1 Summary

Option 1 will comprise of constructing an overpass above the Hackney Road bridges. This will span over the River Torrens between Hackney Road and Park Terrace. This design will accommodate for the O-Bahn buses crossing the River Torrens, entering or exiting Adelaide's CBD. The opening between the two Hackney Road bridges allow for the installation of concrete pads and columns on either side of the River Torrens. The overpass will then be constructed, allowing for O-Bahn traffic to pass above the two Hackney Road bridges. This design will separate O-Bahn traffic from car traffic, which will reduce traffic delays and encourage the use for public transport. The overpass will also minimise permanent road widening to Hackney Road and Park Terrace.

5.2.2.2 Constraints and issues

Temporary roads will need to be constructed to divert heavy traffic. An issue which may be faced prior to construction is that Hackney Road and Park Terrace may not have the required space. Surrounding properties could be affected by construction noise and machinery vibration which would cause damage to these properties. Overhead wires could interfere with cranes and structure of the overpass, therefore wires must be removed and relocated prior to construction. 300-400 tonne crane will be required for the overpass, however may consume too much space along Princess Highway. A crane this size can be quite costly when needed over a long period of time. Constructing an overpass may lead to importing materials interstate which can be costly during delivery and installation. Locating and removing all unknown services below roads will be an expensive process. Installation of concrete pads on riverbank edge will cause difficulties in design and installation.

5.2.3 Option 2 – Road Widening Bridge and Overpass

5.2.3.1 Summary

Option 2 is the proposed widening and the addition of an overpass. The scope of works will involve the addition of a third bridge to span between the existing two bridge sections allowing for the addition of a bus only lane to exit via the O-Bahn. Additionally a single lane overpass will connect Park Road to a new single lane road which will widen into a double lane before the intersection. A bus only lane will take over the existing left hand lane of Hackney Road heading towards the CBD. The two bus only lanes will extend all the way down to the intersection.

5.2.3.2 Constraints and issues

The road widening will reduce gap between residential areas and Hackney Road. The garden beds separating the two directions of traffic on Hackney Road will have to be removed to make way for the bus only lanes. Two trees will have to be moved to make way for the new road section. The bridge and the overpass will increase coverage over the Torrens. The existing intersection will have to be rebuilt to account for the new lanes. The heavy equipment needed to move the precast concrete sections for the overpass will have a large footprint. The soil around the river area could need compacting or reinforcing to stop banks collapsing.

5.2.4 Option 3 – Underpass Bridge

5.2.4.1 Summary

Option 3 involves implementing a third 'bus only' bridge that runs under the two existing bridges crossing the River Torrens acting as an underpass. It will start just before the two existing bridges and finish just after before forming into an underground tunnel. This tunnel will stretch the complete length of hackney road all the way to the Botanic Road/Hackney Road intersection.

The underpass would line up directly in the middle of the two existing bridges to allow the buses to easily enter and exit the O-Bahn tracks without traffic disturbance. This central location also assists in providing ample room for column supports. There is sufficient space separating the two existing bridges which would be large enough to house these column supports making it a very suitable and ideal location.

The purpose of this underpass is to isolate the buses from traffic, improving their travel times. This would be achieved by making the new two lane underpass available only to buses. By only being available to buses, the motorists will gain an extra lane travelling each way down Hackney Road. This extra lane will also introduce more room for bikers and pedestrians travelling along the road.

5.2.4.2 Constraints and issues

With this potential solution, there are a few major issues. These include, high cost, potential environmental alterations, minimal room to build and severe traffic disturbance during construction.

Firstly as the scope of this solution includes a third bridge leading into an underground tunnel, it can be said that there is a fair amount of earthworks involved. With the labour required for such a job, it can be said that this idea will be quite expensive. If however this solution can bring a large benefit to the community, then the cost would not be considered as much as an issue.

Secondly due to the location of the two existing bridges, there is not a great deal of space for a third bridge. This may mean alterations to the current set up and furthermore, the removal of land and trees for a wider hackney road. With this comes a further issue explained in previous sections, the risk of disturbing heritage areas. As this should be well avoided, new suggestions may need to be considered to create room for such earthworks described.

Lastly due to the degree of earthworks involved, it may be difficult to constantly divert traffic during construction. Hackney Road can be quite busy especially during peak hours as it's close to the CBD.

Although majority of the construction will be carried out during night works, there will still be areas along Hackney road that will be blocked minimising room for traffic.

5.3 Methodology for Delivering the Feasibility Study

Maglanas Consulting has an excellent history surrounding the production of detailed and accurate feasibility studies. We critically analyse data and conduct extensive research and investigations on all aspects of proposed solutions to determine the most feasible design to present to our clients. Our past methodologies have proven highly effective and successful in determining optimal solutions based on an economic, environment, safety, construction, cost, time and social perspective. We aim to deliver another successful feasibility study to DPTI through the following methodology:

5.3.1 Stage 1 – Collect Background Information

Initially, our teams (Geotechnical, Transport, Environmental, etc) will analyse all data provided to fully understand the requirements, details, constraints and issues associated with the project. This will also enable us to determine which areas of the project will require further investigation. Additionally, site inspections will be critical to visualise problems, develop other constraints and look for ways to resolve potential issues. In this early stage, we will ensure all personnel understand every aspect of the information provided by consulting with the client and key stakeholders.

The inputs of the feasibility study include:

- Traffic and geotechnical surveys
- Noise and vibration data
- Layout of existing conditions and residential/public areas
- Stormwater and river flows

5.3.2 Stage 2 – List Evaluation Criteria

This stage sets the criteria against which all potential solutions are critiqued. At Maglanas the key evaluation criteria we consider include:

- Safety
- Effect on the environment and community
- Effect on services and heritage sites
- Cost and time
- Meeting the project objectives
- Social desirability
- Constructability and practicality

5.3.3 Stage 3 – Investigate the Solutions against the Evaluation Criteria

In this stage, we consider the impact that all proposed solutions have on the above evaluation criteria. This involves our teams exploring the advantages and disadvantages of all proposed solutions by working collaboratively with each other and the client. Also during stage 3, assumptions will be verified and cost to benefit analyses, Environmental Impact Statements (EIS) and conceptual design details for all proposed structures and works will be devised.

5.3.4 Stage 4 – Propose the Most Feasible Solution

Maglanas Consulting will firstly consider each of the individual options separately. We estimate that it will take 2 weeks to complete a detailed study for each potential option. We will then compare and contrast all studies and conclude the feasibility study with a recommendation on the most feasible option. The recommended solution will be that which best satisfies our diverse evaluation criteria and still meets the project objectives.

The outputs from the feasibility study will include:

- Feasibility study report
- Deliverables such as EIS's and Environmental Management Plans (EMPs)
- Ongoing financial record of expenditure
- Meeting minutes
- A presentation to the client

While all the aforementioned stages are being completed, the individual departments will be formalising their individual reports specific to their area of expertise. These will be submitted a week before the feasibility study deadline to allow the project manager the time required to compile the reports and review the feasibility study in collaboration with the Maglanas team.

5.4 Areas for Consideration

5.4.1 Transport Engineering

5.4.1.1 Scope of Works

Our Transport team will play a significant role in successfully delivering this project for DPTI. The team will be responsible for numerous tasks including:

- Conducting a detailed study in the feasibility stage to fully understand the project area and identify all issues and constraints that could impede the design
- Consulting and negotiating with key stakeholders during all stages of planning and design to develop detailed traffic management plans for Hackney Road. Traffic plans and alternative routes will be provided for the study area for all phases of construction
- Reviewing DPTI surveys and traffic data to estimate traffic volumes and patterns in the study area. Further studies of our own may need to be conducted in the feasibility stage
- Determining the Design Traffic considering annual growth rates
- Designing wider roads (or remodel current roads) to accommodate for new priority bus lanes and to withstand the design traffic loads
- Modelling pavements with different materials to obtain a cost-effective and quality design
- Incorporating bus priority traffic signals into our designs and modelling their effectiveness
- Developing a new design at the Botanic Road / North Terrace / Hackney Road / Dequetteville Terrace intersection
- Devising a maintenance schedule for all new solutions

5.4.1.2 Goals and Objectives

The main goals and objectives that we will strive to meet while delivering these tasks include:

- To decrease traffic congestion, reduce bus delays, improve reliability of the O-Bahn service and reduce travel times for public transport patrons along Hackney Road
- To improve public transport efficiency using bus lanes and bus priority traffic signals
- To ensure that the safety of cyclists, pedestrians and motorists is never compromised
- To ensure our design and traffic management plans do not adversely affect the environment, surrounding roads, businesses and residents
- To provide additional pedestrian and cyclist facilities
- To limit the number of road closures and diversions during construction through strategic planning to ensure minimal disruption to existing traffic flows in the area
- To ensure uninterrupted access to residential areas, local businesses and major tourist attractions such as the National Wine Centre, Botanic Gardens and the Adelaide Zoo is always provided
- To improve bus networks throughout the Adelaide CBD to remain consistent with DPTI's vision for creating more integrated transport services that shape our city and meet the needs of our community

5.4.1.3 Problems and Potential Solutions

We foresee a number of potential problems that will be associated with the above tasks. We have outlined these, together with methods to resolve the problem in Table 1.

Table 1: Potential problems and resolutions.

Potential Problem	**Resolution**
Construction works will restrict traffic flow along Hackney road and other surrounding roads.	Complete major road works at night when less cars are present, or, devise alternative routes for the public so that construction can progress during the day. The latter option has the advantage of being able to work 24 hours.
Traffic conditions may change. This is a potential problem for the locals.	Inform the public several weeks in advance through media coverage. Letters shall be distributed to residents also.
Road widening to accommodate for bus lanes may hinder pedestrian and cyclist movement.	Design a dedicated bridge or underpass for buses/pedestrians/cyclists adjacent to or within Hackney Road. This will need further investigation in the feasibility study.

5.4.2 Water Resources

5.4.2.1 Scope of Works

Our Water Resources team is highly skilled and across the many facets that apply to the management of natural water. This is particularly important with the proposed works designed to span the River Torrens and modifying the surface of a large section of garden beds and parklands. This team will be responsible for numerous tasks including:

- Conducting a detailed study in the feasibility stage to fully understand the water flow characteristics that are existing in order to develop a system that does not negatively impact the local environment
- Conducting a detailed study of the proposed solutions to ensure there is no environmental degradation both during construction and when in service
- Determining any future local development and how this may have an impact on the existing stormwater system and developing solutions to cope
- Examining and recommending new products and technologies where these can be demonstrated to improve capacity, reduce maintenance costs and produce a positive public impact
- Considering, improving and replacing existing stormwater infrastructure where possible in order to give a service life befitting the 21st century
- Considering the installation of effective trash racks and pollution separators
- Examining stormwater collection, filtration and harvesting

5.4.2.2 Goals and Objectives

The main goals and objectives that we will strive to meet while delivering this project for DPTI include:

- To reduce any negative impact of stormwater and improve it where possible
- To incorporate any devices which may assist the future direction of any group
- To produce no negative impact to the Torrens River or any other natural watercourse during construction
- To improve the water quality both in and entering the Torrens River
- To reduce ongoing maintenance costs of stormwater management through improved infrastructure
- To produce an aesthetically pleasing design of the infrastructure and watercourse
- To ensure a design that can implement a workable Construction Environmental Management Plan (CEMP)

5.4.2.3 Problems and Potential Solutions

We foresee a number of potential problems that will be associated with the above tasks. We have outlined these, together with methods to resolve the problem in Table 2.

Table 2: Potential problems and resolutions.

Potential Problem	**Resolution**
Weather may change from seasonal design assumptions.	Ensure there is an adequate back-up system or methodology designed into the proposed work.
Construction of the bridge may cause damage to the riverbank and pollution to the watercourse.	Ensure solution designed takes this into account and that appropriate measures are designed into the construction process.
Design of bridge and other structures may cause an increase in vermin, eg, pigeons.	Ensure bridge is designed with minimal areas where birds could roost. Ensure stormwater outlets have appropriate devices to reduce vermin entry.
Not understanding the hierarchy of authority each stakeholder has in the project.	Ensure adequate research into State Regulations and maintain effective communication.

5.4.3 Structural

5.4.3.1 Scope of Works

Our Structural Design team have high levels of experience in bridge design. This is an important aspect as the proposed works are designed to span the River Torrens. This team will be responsible for several tasks including:

- Conducting a detailed study in the feasibility stage to create detailed structural documentation
- Ensuring that the design will have a minimum serviceability of 100 years
- Examining whether alternative concrete types and materials would be effective, as to reduce the environmental impact of the project
- Investigate whether updating existing bridges would be cost effective and have a lasting impact

5.4.3.2 Goals and Objectives

The main goals and objectives that we will strive to meet while delivering this project for DPTI include:

- To streamline traffic to and from the CBD along Hackney Road
- To reduce traffic build-up and congestion during peak hour traffic
- To produce an aesthetically pleasing design that is also cost effective and improves on existing infrastructure
- To ensure final design will be able to be implemented with a minimum of problems or issues

5.4.3.3 Problems and Potential Solutions

Table 3 outlines the problems we as structural engineers will face.

Table 3: Potential problems and resolutions.

Potential Problem	**Resolution**
Bridge becomes damaged during construction	Reinforce bridge and repair damage done
Metro tunnel collapses during construction	Rebuild tunnel and reinforce walls
Construction slows down traffic	Assign traffic wardens and set up road ways to ensure driver / pedestrian safety
Risk of River Bank Collapsing	Test bank strength and if needed reinforce bank before loading

5.4.4 Urban Planning

5.4.4.1 Scope of Works

Maglanas Consulting has put together an Urban Planning team for this project. Their task is to ensure the successful outcome of the urban planning components of this project. Their roles will include the following:

- Define the overall scope of the urban development required for this project
- Prepare a strategic plan for long term development and growth to determine how the new works will best improve the local area
- Prepare study on effects the development upgrade will have on local population, businesses etc.
- Determine existing land use zones and compare with proposed design to determine if new zoning approval is required
- Consultation with local stakeholders to develop a common vision for the area
- Consult with council to determine council requirements
- Detailed study of the local architecture to ensure the road and bridge design suits the streetscape
- Consult on design for new bus shelters to suit the local streetscape

5.4.4.2 Goals and Objectives

Alongside providing the necessary infrastructure upgrade, this project has a number of key aims and objectives. Over the course of this feasibility study, our Urban Planning team will investigate these aims and detail possible opportunities. Their tasks will include investigation and design for:

- Enhancing the local parklands through integration with the new works
- Enhancing the local heritage properties through integration with the new works
- Consultation with local heritage properties to ensure the development does not diminish or impede on these important buildings
- Consultation with the Botanic Gardens to ensure the proposed development suits the parklands
- Consultation with local businesses to determine the best methods to minimise interruption to their business

5.4.4.3 Problems and Potential Solutions

Potential problems and their respective solutions have been outlined in Table 4.

Table 4: Potential problems and resolutions.

Potential Problem	**Resolution**
Project cannot be designed without significant negative impact to local businesses.	Ensure the design for these locations allows for their construction and completion in the shortest time possible.
Proposed design requires new zoning approval.	Consult with relevant authorities to gain these approvals.
Heritage properties/other buildings are damaged due to construction works.	Conduct dilapidation reports on selected buildings prior to work to ensure an accurate record of their condition is recorded and can be compared with new damage.
Project cannot be designed without damage to local vegetation.	Include new vegetation in new design. Relocate significant trees if required.

5.4.5 Environmental

5.4.5.1 Scope of Works

The Environmental team will be responsible for managing a variety of tasks. The scope of works includes:

- Pollution control
- Dust control
- Noise and vibration control
- Minimising waste from construction operations
- Monitoring air quality
- Keeping roads and environment clean
- Protecting existing infrastructure.
- Construct a new improved plan and design
- Conducting Environmental Impact Assessments (EIA) and Environmental Management Plans (EMPs)

5.4.5.2 Goals and Objectives

The main goals and objectives that the environmental team will strive to meet while delivering this project for DPTI include:

- Minimise the impact of construction and overall design on the environment
- To reduce the amount of greenhouse gas emissions by encouraging others to use efficient and effective public transport instead of cars
- Soil loss and land clearing must be reduced
- Keep vehicles and equipment on specific road or path
- Prevent the contamination of storm water
- Ensure the production of dust during construction does not cause any health or environmental issues
- Minimise dust and sediment runoff into River Torrens
- Minimise waste load that may be discharged into the environment
- Minimise noise and vibration from machinery
- Ensure contaminated materials are excavated and disposed correctly
- Seal contamination of materials
- Ensure environmental risks from emissions of exhaust gases are minimised
- Particular contingency plans and operational precautions are met
- Maintenance, inspections and surveillance each day
- Daily risk assessments and management overviews

5.4.5.3 Problems and Potential Solutions

We foresee a number of potential problems that will be associated with the above tasks. We have outlined these, together with methods to resolve the problem in Table 5.

Table 5: Potential problems and resolutions.

Potential Problem	**Resolution**
Land disturbance from vehicles and machinery.	Rehabilitate: Grow grass, bushes or and trees.
Minimise the pollution of stormwater.	Install intercept drains to prevent waste from entering environment.
Noise and vibration issues from machinery.	Fit machinery with mufflers, provide noise reduction screens or enclose noisy equipment.
Damaging surrounding environment or infrastructure.	Care must be taken when working around sewerage pipes or drainage and concrete barriers could be used to avoid any damage.

5.4.6 Geotechnical Engineering

5.4.6.1 Scope of Works

Our Geotechnical Engineering team will be required to conduct geotechnical analysis in order to successfully deliver this project for DPTI. The Geotechnical team will be responsible for numerous tasks including:

- Analysing a series of Bore Log Tests in the surrounding area to analyse the soils and soil parameters around the proposed construction site
- A complete geotechnical survey of the site which displays changes in soil properties across the work site

5.4.6.2 Goals and Objectives

The main goals and objectives that we will strive to meet while delivering this project for DPTI include:

- To analyse the mechanical properties of the existing soil in the area and
- To design the structure to a standard at which it will be safe and sustainable with the surrounding soil
- To develop a construction plan which is safe and does not put construction workers at risk due to soil slip failure or collapse
- To analyse the existing soil profile in order to design footings and foundation supports properly
- To ensure our geotechnical engineering plan has minimal impact on the environment and keeps soil disruption to a minimum
- To provide a range of earthwork design options which could potentially serve as a solution to the proposed design

5.4.6.3 Considerations and potential solutions

We foresee a number of potential problems that will be associated with the above tasks. We have outlined these, together with methods to resolve the problem in Table 6.

Table 6: Potential problems and resolutions.

Potential Problem	**Resolution**
Unexpected geotechnical features that may need to be removed, i.e. Large Rock.	Use contingency funds to remove unexpected features and resolve issues in a timely matter.
Encountering contaminated soil.	Soil remediation.
High levels of groundwater.	Looking at alternative design options so that the designs are not adversely affected by the groundwater.

5.4.7 Assumptions

Some assumptions have been made in order to complete the probable tasks for the feasibility study. At this stage, Maglanas Consulting makes the following assumptions:

- Any data and survey information that is not obtained by Maglanas Consulting is accurate, up to date and available during the feasibility stage
- Geotechnical investigations and data on subgrades, sub-bases etc. are up to date and correct
- Soil tests have accurately been tested in the correct locations
- The soil profile is uniform across the entire work site
- Average Rainfall Intensity (ARI) and Intensity Frequency Duration (IFD) data obtained through the Australian Bureau of Meteorology (BOM) is representative of actual rainfall events surrounding the site
- Environmental data provided will be correct and up to date
- Service locators will find most underground services and accurately mark their locations
- Current levels of traffic will increase by two percent per annum
- Sound engineers have correctly measured the machinery noise
- The parklands shall not be encroached upon by any part of the design
- The designers shall ensure the design does not require the builder to use the parklands for storage of materials or equipment

5.4.8 Additional Considerations and Constraints

To successfully deliver this solution to DPTI, additional consideration will need to be given to:

- The effect of night works on the project program and budget
- Unexpected services located underground hindering our solution from being implemented as designed. i.e., telecommunication, high voltage lines, old storm water systems, sewer and water pipes. This will be resolved by changing the design to work around the services or, relocate services
- The project will impact access and trade to local businesses i.e. the two pubs and this will have to be considered in both design and construction phases of the project
- Permits as they may constrain works to certain hours and this will impact our program
- Assessing the durability of existing water infrastructure. This may need representation from local government
- The time of year construction works will be scheduled as this will affect the volume of water encountered
- The time of year construction works will be scheduled as this will affect the traffic load and hours in the day
- Artefacts and/or bones found during earthworks. Monitors may be needed
- Individual direction of various parties may not reach a solution that is suitable to all. This will need a clear understanding of the hierarchy of authority each party has and the potential problems that may be encountered
- Assessing the durability of roads on and around Hackney Road especially if alternative routes are devised. This is because an increase in traffic on new proposed roads may overload the pavement as it may not have been designed to accommodate for the additional loads. Certain roads may therefore need redesigning to cater for the increase traffic volume
- Individual direction of various parties may not reach a solution that is suitable to all. This will need a clear understanding of the hierarchy of authority each party has and the potential problems that may be encountered

These considerations and constraints will be further investigated in the feasibility study.

5.5 After Completing the Feasibility Study

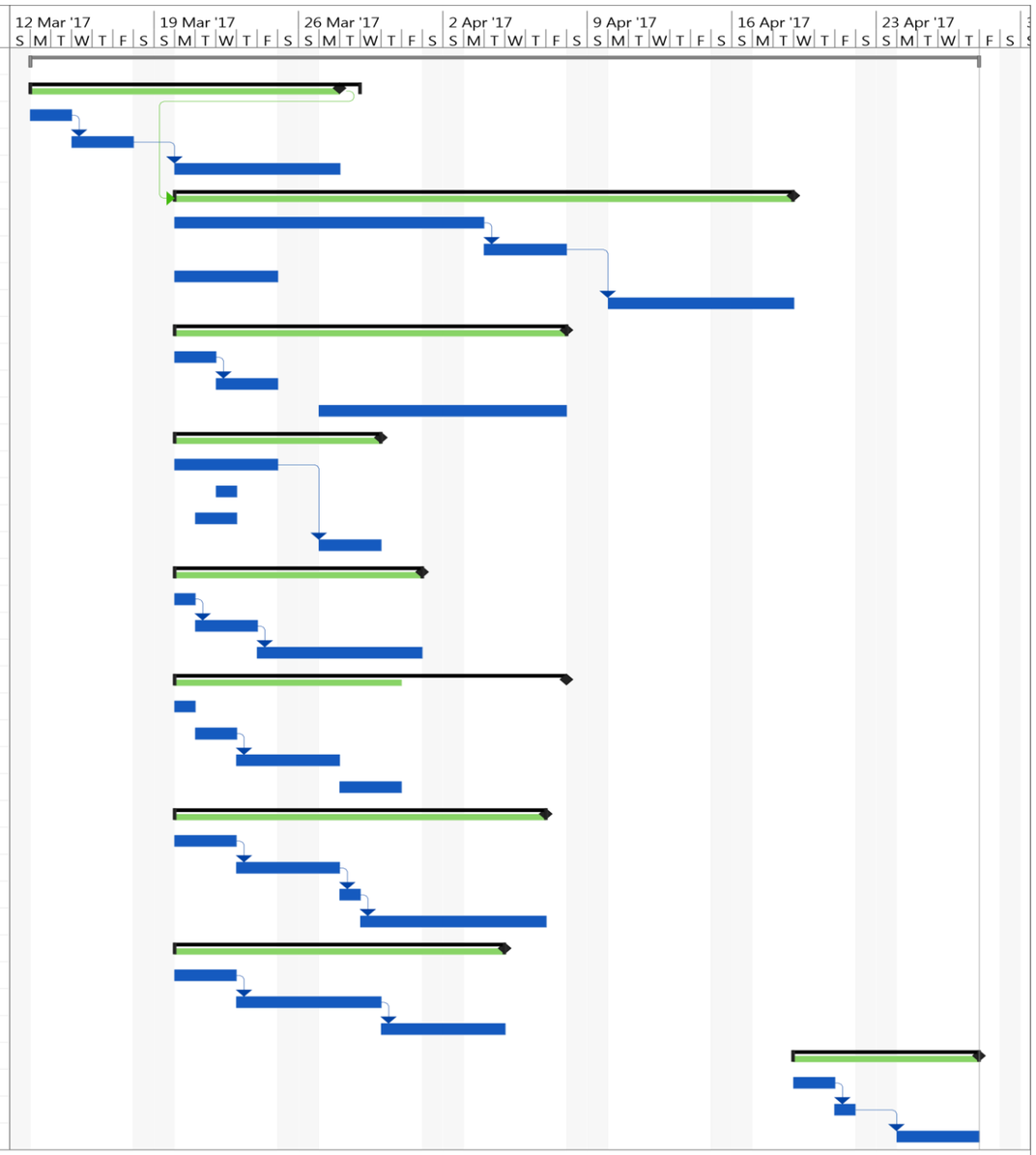
Upon completing the feasibility study, the next steps involved are as follows:

- Provide the client with a cost estimate to undertake the detailed design
- Develop AutoCAD design drawings
- Provide documentation to meet the criteria of the detailed design brief
- Provide design calculations to prove the design is accurate
- Present the detailed design to the client

6 PROJECT SCHEDULE

6.1 Gantt Chart

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
0		**Feasability Study**	**34 days**	**Mon 13/03/17**	**Thu 27/04/17**	
1		**Preliminaries**	**12 days**	**Mon 13/03/17**	**Tue 28/03/17**	
2		Meeting with Stakeholders	2 days	Mon 13/03/17	Tue 14/03/17	
3		Project Team Meeting	3 days	Wed 15/03/17	Fri 17/03/17	2
4		Quality Assurance Plan	6 days	Mon 20/03/17	Mon 27/03/17	3
5		**Traffic Analysis**	**22 days**	**Mon 20/03/17**	**Tue 18/04/17**	1
6		Record Traffic Data	11 days	Mon 20/03/17	Mon 3/04/17	
7		Analyse Traffic Data	4 days	Tue 4/04/17	Fri 7/04/17	6
8		Devlop Public Transport Plan	5 days	Mon 20/03/17	Fri 24/03/17	
9		Develop Traffic Plan	7 days	Mon 10/04/17	Tue 18/04/17	7
10		**Structural Design**	**15 days**	**Mon 20/03/17**	**Fri 7/04/17**	
11		Survey of Site	2 days	Mon 20/03/17	Tue 21/03/17	
12		Determining Design Loads	3 days	Wed 22/03/17	Fri 24/03/17	11
13		Structual Design Models	10 days	Mon 27/03/17	Fri 7/04/17	
14		**Urban Planning**	**8 days**	**Mon 20/03/17**	**Wed 29/03/17**	
15		Community Consultation	5 days	Mon 20/03/17	Fri 24/03/17	
16		Stakeholders Implications	1 day	Wed 22/03/17	Wed 22/03/17	
17		Investigation of Social Impacts	2 days	Tue 21/03/17	Wed 22/03/17	
18		Landscaping Design	3 days	Mon 27/03/17	Wed 29/03/17	15
19		**Environmental Investigation**	**10 days**	**Mon 20/03/17**	**Fri 31/03/17**	
20		Meeting with EPA	1 day	Mon 20/03/17	Mon 20/03/17	
21		Environmental Assessment	3 days	Tue 21/03/17	Thu 23/03/17	20
22		Environmental Management Plan	6 days	Fri 24/03/17	Fri 31/03/17	21
23		**Water Systems Design**	**15 days**	**Mon 20/03/17**	**Fri 7/04/17**	
24		Rainfall Data Analysis	1 day	Mon 20/03/17	Mon 20/03/17	
25		Existing Stormawater Investigation	2 days	Tue 21/03/17	Wed 22/03/17	
26		Modelling of Stormwater	3 days	Thu 23/03/17	Mon 27/03/17	25
27		WSUD	3 days	Tue 28/03/17	Thu 30/03/17	
28		**Geotechnical Investigation**	**14 days**	**Mon 20/03/17**	**Thu 6/04/17**	
29		Geotechical Survey of Site	3 days	Mon 20/03/17	Wed 22/03/17	
30		Bore Log Testing	3 days	Thu 23/03/17	Mon 27/03/17	29
31		Analysis of Soil Profile	1 day	Tue 28/03/17	Tue 28/03/17	30
32		Earthwork Design	7 days	Wed 29/03/17	Thu 6/04/17	31
33		**River Torrens Impact Investigation**	**12 days**	**Mon 20/03/17**	**Tue 4/04/17**	
34		Pollution Impact	3 days	Mon 20/03/17	Wed 22/03/17	
35		Effect on flow and hydraulics	5 days	Thu 23/03/17	Wed 29/03/17	34
36		Hydraulic Model Analysis	4 days	Thu 30/03/17	Tue 4/04/17	35
37		**Feasability Study Finalisation**	**7 days**	**Wed 19/04/17**	**Thu 27/04/17**	
38		Combine Reports	2 days	Wed 19/04/17	Thu 20/04/17	
39		Final Feasability Study	1 day	Fri 21/04/17	Fri 21/04/17	38
40		Presentation Preperation	4 days	Mon 24/04/17	Thu 27/04/17	39



Project: Feasability Study
Date: Thu 9/03/17

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

Figure 3: Gantt Chart.

7 COST AND RESOURCE SCHEDULE

7.1 Resources Allocation

All of our staff will be studying whilst this project is running. Consequently, we will be undertaking extensive research as part of our Research Theory and Practice course and some will also be redesigning the Whyalla Hospital. In Table 7 below, all green slots represent the times we have allocated to complete this project while the slots in orange and pink highlight the percentage of time occupied by the aforementioned commitments. As can be seen in Table 7, our staff will be dedicating most of their time to successfully delivering this project to DPTI. Each staff member has dedicated approximately 15-20 hours per week and we feel this is more than adequate to achieve the outcomes required in the timeframe given.

Table 7: Time allocated to completing this project.

	Week 1 (Week 3)					Week 2 (Week 4)					Week 3 (Week 5)					Week 4 (Week 6)					Week 5 (Break)					Week 6 (Break)					Week 7 (Week 7)				
	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F
Team Member																																		
Simon Brederek																																		
Liam Wegener																																		
Manuel Martins																																		
Andrew Thompson																																		
Ashlen Fahy																																		
George Phillipson																																		
Argyrios Kikianis																																		
Nathan Cercone																																		

100% Allocation	
70% Alloctaion	
25% Allocation	

7.2 Cost breakdown table

Table 8: Cost breakdown.

Description	Employees	Weeks	Hours	Rate ($/hr)	Cost
Project Management					
Project Manager	1	7	20	240	$ 33,600.00
Assistant Project Manager	1	7	20	240	$ 33,600.00
				Section Total	$ 67,200.00
Geotechnical Design					
Team Head	1	7	20	220	$ 30,800.00
Senior Engineer	1	7	15	220	$ 23,100.00
Engineer	1	7	15	180	$ 18,900.00
Graduate Engineer	2	7	15	120	$ 25,200.00
				Section Total	$ 98,000.00
Structural					
Team Head	1	7	20	220	$ 30,800.00
Senior Engineer	1	7	15	220	$ 23,100.00
Engineer	2	7	15	180	$ 37,800.00
Graduate Engineer	2	7	15	120	$ 25,200.00
				Section Total	$ 116,900.00
Water Resources					
Team Head	1	7	20	220	$ 30,800.00
Senior Engineer	1	7	15	220	$ 23,100.00
Engineer	1	7	15	180	$ 18,900.00
Graduate Engineer	1	7	15	120	$ 12,600.00
				Section Total	$ 85,400.00
Urban Design					
Team Head	1	7	20	220	$ 30,800.00
Senior Engineer	0	7	15	220	$ -
Engineer	1	7	15	180	$ 18,900.00
Graduate Engineer	2	7	15	120	$ 25,200.00
				Section Total	$ 74,900.00
Environmental Design					
Team Head	1	7	20	220	$ 30,800.00
Senior Engineer	1	7	15	220	$ 23,100.00
Engineer	1	7	15	180	$ 18,900.00
Graduate Engineer	1	7	15	120	$ 12,600.00
				Section Total	$ 85,400.00
Transport					
Team Head	1	7	20	220	$ 30,800.00
Senior Engineer	1	7	15	220	$ 23,100.00
Engineer	2	7	15	180	$ 37,800.00
Graduate Engineer	3	7	15	120	$ 37,800.00
Section Total	32			Section Total	$ 129,500.00
				Subtotal	$ 657,300.00
				GST	$ 65,730.00
				Total (incl GST)	$ 723,030.00

SOUTH AUSTRALIA

Government of South Australia
Department of State Development

South Australian Industry Participation Policy

Employment Contribution Test for Metropolitan Adelaide

October 2017

Measuring Economic Benefit through Labour

www.industryadvocate.sa.gov.au

SA IPP Metropolitan ECT

This Employment Contribution Test is designed for contracts of:

- $33,000 up to $4 million in Metropolitan Adelaide

  (All prices are GST inclusive)

Please note that an agency may direct the use of this template outside of the thresholds above, based on a determination of the potential economic and social benefit for South Australia, or a specific region, resulting from the procurement. This determination is in no way an indication of price.

Employment is the key driver of economic contribution from procurement that is being assessed through the use of this template:

Part A: Employment

For further information on these categories please refer to the Office of the Industry Advocate's website www.industryadvocate.sa.gov.au.

For contracts between $33,000 and $220,000 the Employment Contribution Test should be used to determine the winner when there are two or more bids that meet the needs of Government and they represent good value (i.e. the more local jobs associated with the tender the more likely the bid is to be successful).

For contracts between $220,000 and $4 million a minimum 15% weighting will apply to contract evaluations that use a weighted award criteria.

Guiding documents including the South Australian Industry Participation Policy, Procedural Guidelines and Frequently Asked Questions are available at www.industryadvocate.sa.gov.au.

The Office of the Industry Advocate is available to assist with requests for information on IPP requirements. Please phone (08) 8226 8956 or email: oia@sa.gov.au.

DOCUMENT CONTROL

Managed by Division:	Office of the Industry Advocate	**Approved by:**	Industry Participation Advocate	**File number:** **Version No:**	OIA15/00561 5.0
Contact position:	Director, Office of the Industry Advocate	**Date effective:**	09 March 2017	**Status:**	Current
Responsible position:	Director, Office of the Industry Advocate	**Scheduled review date:**	30 June 2020	**Security classification:**	UNCLASSIFIED 'For Official Use Only'

APPROVED **9 / 03 / 2017**

Signed:

Print Name: **Ian Nightingale**

Position: **Industry Participation Advocate**

GENERAL ADMINISTRATION

Business Name	Maglanas Consulting Pty Ltd			
Project Manager	Simon Bredereck			
Telephone	0407 123 456	**Email**	Bresj004@mymail.unisa.edu.au	
What is your physical presence in South Australia? *(you can tick more than one)*	Head Office ☒	Branch Office ☐	Warehouse ☐	Other (please specify) ☐
Location of physical presence	Mawson Lakes			

Industry Capability Network (ICN) Gateway *You are encouraged to be registered on the Industry Capability Network (ICN) Gateway* http://gateway.icn.org.au	
Please indicate your ICN Gateway CID Number	1098 7654 32

Tender Title	O-Bahn City Access Project
Tender Reference Number	17D123
Responsible Government Agency	DPTI
Tender value ($AUD) *This is the total value of your tender, including GST, including all options and for the life of the contract including all possible extensions*	723,030

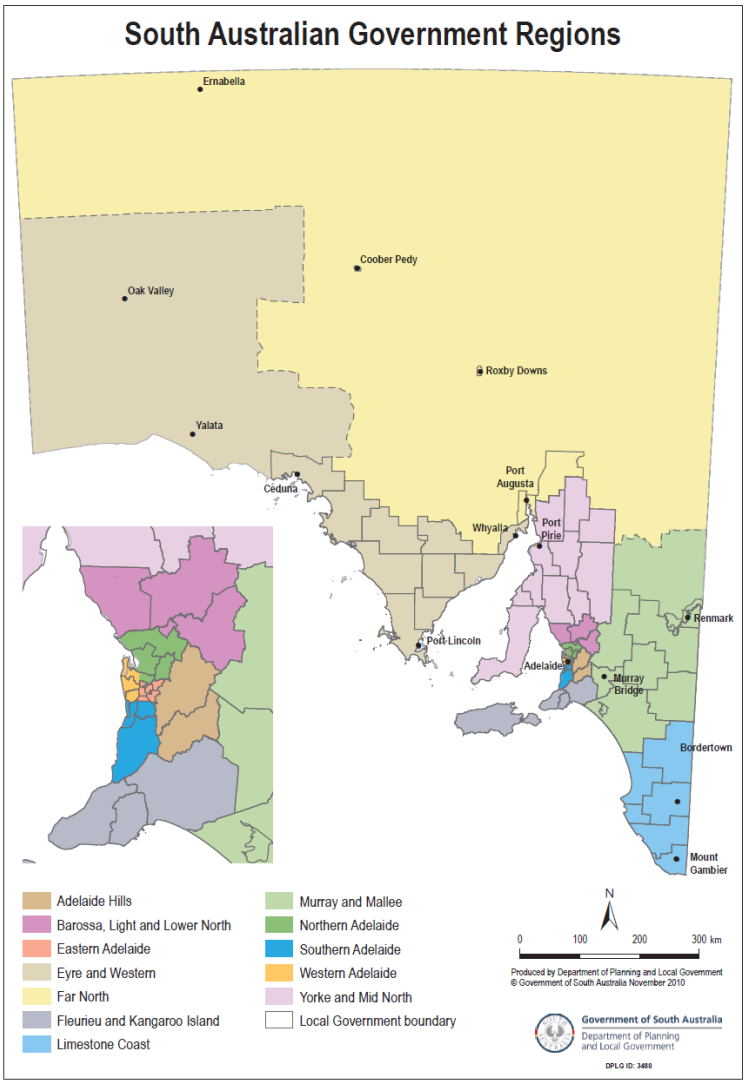
PART A: LABOUR

The purpose of this section is to measure the potential economic benefit to the State through the use of local labour.

	i	ii	iii
	Total	**How much in the South Australia** *Note: do not include Fly-in/Fly-out labour* *See Guidance Note 4*	**Percentage of hours in South Australia** *See Guidance Note 3*
Head Contract			
A1: How many hours of labour will be used to perform the contract from within your business? *See Guidance Note 1*	3640hrs	3640hrs	100%
Sub-contract/s or supply arrangements			
A2: Will you need to engage one or more subcontractors to deliver this contract?	☐YES Complete A3		☒ NO No further action required
A3: How many hours of sub-contracted labour will be used to perform the contract? *See Guidance Note 2*	NA	NA	NA
A4: Total *Add A1 & A3*	…….hrs	…….hrs	100%

Guidance Notes:

1. *We are seeking the number of labour hours your business will employ directly to deliver the contract should you be successful. Do not include the labour hours related to outsourced or subcontracted work in this question. Outsourced and subcontracted work should be included in A3.*
2. *We are seeking an estimation of the number of labour hours from any outsourced and subcontracted work to deliver the contract.*
3. *If you are quoting/tendering for an hourly rate rather than total number of hours, please complete column (iii) only*
4. *Please use principal place of residence to determine South Australian labour (do not include fly in/fly out labour).*



For the purpose of this assessment, Metropolitan Adelaide is the State Government Regions of:

- Western Adelaide
- Northern Adelaide
- Eastern Adelaide
- Southern Adelaide

http://www.sa.gov.au/__data/assets/pdf_file/0019/9442/SA_Government_regions_State_map.pdf