



Project:

**Oaklands Park Grade Separation**

Document:

**Feasibility Study Tender Submission**

For:

**Department of Planning, Transport and Infrastructure (DPTI)**

By:

**DPC Engineering Pty Ltd**

Ref:

**0317-001**

Date: 10/03/17

Revision: 00

Date: 10<sup>th</sup> March 2017

Kirsty Smeaton

**Department of Transport and Infrastructure**

77 Grenfell Street, Adelaide,

South Australia, 5001

## Re- Feasibility Study of Oaklands Park Grade Separation

Dear Kirsty Smeaton and Mark Ellis,

Thank you for inviting DCP engineering to provide you with feasibility study for the Oakland Park Grade Separation project. We are pleased to be able to assist you with this, and propose you with the following scope of works\* for your consideration.

- Prepare and undertaken grade separation feasibility study at project site
- Generation and evaluation of multiple alternative concepts
- Preparation of indicative comparative cost estimates between alternatives
- Undertaken an environmental assessment and provide impact report
- Provide final report of feasibility study and make recommendation

For the scope identified above, we propose the following **Lump Sum Fees**:

Project Phase	Fees (excluding GST)
Over heads	\$15,00.00
High-level impact analysis	\$72,150.00
Traffic modelling	\$72,150.00
Engineering Design Feasibility	\$288,600.00
Cost estimates and final feasibility report	\$72,150.00

**With a total sum of \$520,050.00 (plus GST \$52,005.00) = \$572,055.00\*\* firm for 60 days**

Note:

\* Detailed scope of works refer to section 2 of this proposal

\*\*Any work outside of the scope of works listed will be considered additional, and will be charged at hourly rates as listed in section 2.5 – conditions of tender

\*\*\*Any change in scope deemed to be greater than 10% of the initial contract value shall be treated as a variation and will require an amendment to the initial contract

Thank you for the opportunity to prepare this tender. We trust our proposal meets your requirements. Please do not hesitate to contact us if you have any further queries.

Your sincerely

Samuel Matthews

Project Manager

Jia Shi

Assistant Project Manager

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## Company Declaration

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DPC Engineering is commitment to reaching the upmost level of integrity, accountability innovation and safety for all of our clients and stakeholders.

Our mission is to provide a product for our clients that meets or exceeds their expectations, while generating sustainable returns for our stakeholders. We aim to service the industry with regards to improvements in safety and design processes.

DPC Engineering understands that every project is different and every project must be approached in a suitable manner so as to meet the client's needs. DPC Engineering strives to achieve just this.

DPC Engineering has understood the request for tender and will accept without reservation the terms laid out within. DPC Engineering acknowledges that all rates encompassed within the flowing documentation are valid for a period of 60 days. We reserve the right to revise all rates after the period of 60 days.

Sincerely,

**Samuel Matthews**

Project Manager

**Jia Shi**

Assistant Project Manager

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# 1 Company, Team and Capability

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## 1.1 Company Profile

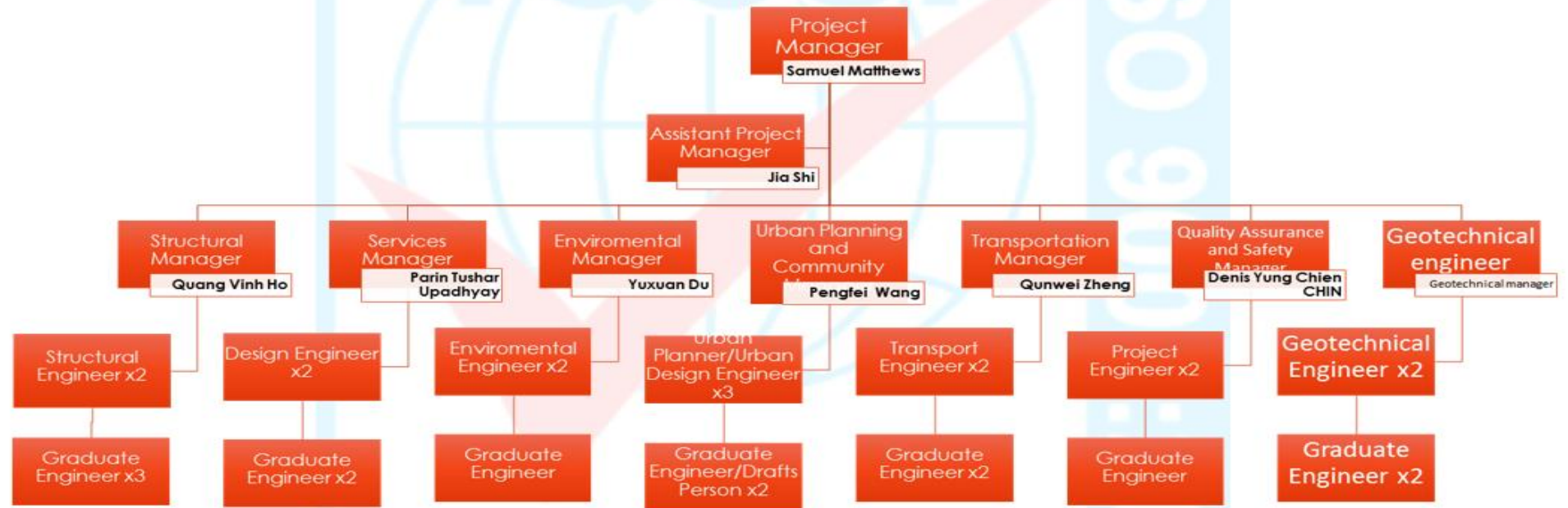
DPC Engineering, founded in 2008, is a relatively new and emerging company within the engineering design and construction industry. With a focus on modern techniques and values, we aim to bring a fresh and innovative perspective to all projects. DPC Engineering aims to be a leader within the Civil Engineering design space, we aim to provide our clients with the highest level of quality for all aspects of our work. As a company; we have made a conscious and aware decision to focus on the safety of our designs and it is this decision that sets us apart for the competition. DPC Engineering also strives to improve the industry by sharing our passion and knowledge with regards to safety in design with our subcontractors and other industry partners.

Although DPC Engineering has a short history as a company, we are a highly experienced and diverse group of people with a wealth of knowledge in the engineering design and construction field. We aim to utilise all aspects of our teams past experience to provide innovative and appropriate solutions to meet our clients need. Our history may be short; but it is diverse and is filled with many successful high profile projects. DPC Engineering draws on the knowledge of these previous projects to implement innovative and efficient solutions to meet the client's needs. This is all done while meeting or exceeding any relevant design standards or procedures.

## **1.2 Management Structure**

DPC Engineering consists of a team of 32 elite engineers specialising in structural design, water resources, geotechnical design, façades, transportation and urban design. Lead by the Project Manager and Assistant Project Manager, the team is further divided into 6 departments. Each department is assigned a team manager followed by project engineers and graduate engineers. The Project Manager and Assistant Project Manager oversee the project, manage and control the company resources, supervising and ensure quality management system implementation to make sure our services meet Client's requirements and that the project is delivered on time. Our team managers have comprehensive knowledge across multiply disciplines, they work seamlessly together to ensure technical quality and accuracy.

### 1.2.1 Company Hierarchy



1



## 1.2.2 Key Personnel

### **Project Manager**

Samuel Matthews is our Project Manager, he brings a broad and extensive knowledge base to the company. Samuel is a Civil and Structural engineer with a background in major civil infrastructure projects along with the mining and exploration industries. Using his extensive project experience Samuel provides us with a clear and detailed direction for our works in the civil infrastructure space.

### **Assistant Project Manager**

Jia Shi is our Assistant Project Manager. Beginning as an estimator, he has many years' industry experience on tender preparation, cost planning, value engineering, design and development for some iconic projects in Adelaide. Upon recent graduation of Civil and structural engineering study, he is now our leading façade engineer specialised in external façade structural design, building physics and green building design, as well as acoustic comfort analysis.

### **Structural Manager**

Quang Vinh Ho is our Structural Manager. His role is to both carry out the strength calculations and prepare the structural drawings to make sure that they are strong enough to withstand the application of different types of loadings comprising of permanent and transient loads. He has a strong grasp of physics, mathematical, 3-D conceptual and creative problem solving skills. With the profound experience base, he is able to deal with a wide range of structures such as bridges, tunnels, and roads as required.

### **Services Manager**

Parin Upadhyay is the service manager. His primary role is to ensure that all the utility services in the region of project remains convenient to the local population. In some cases, he needs to provide an innovative idea for upgrading these services. He is designated as a service manager because of his experience in working with projects related to stormwater system design, structural design and sewerage design. He will ensure that all the project objectives related to services are achieved for this project with the help of his experience and skills.

### **Environmental Manager**

Yuxuan Du is our Environmental Manager. His role is to ensure our designs comply with relevant environmental standard. He has extensive experience on environmental impact and risk analysis, waste management system design and environmental management system design. He will work closely together with all other design departments to make sure our design has minimum

environmental impacts. His previous structural, transportation and geotechnical engineering working experience will give us a most compressive views in all design aspects.

### **Urban Planning and Community Manager**

Pengfei Wang is our urban planning and community manager. Primarily, His role is to identify expectations and needs of different parties involved, which from state government level to the local residents over project area and neighbour area. Then working with different team such as transportation, structural team to make sure that developed solutions encompass urban planning features and properly address the issues raised from different parties.

### **Transportation Manager**

Qunwei Zheng is our transportation manager, his role is to analysis historical traffic data, review and assess current traffic congestion, traffic modelling with prediction of future traffic growth and design efficient traffic system. He has extensive transportation working experience on traffic development proposal and traffic impact assessment. In the past, he has also been involved in various type of projects such as structural engineering design, geotechnical engineering, stormwater drainage and sewerage design, these experiences will help him and his transportation team to solve the problem effectively and efficiently.

### **QA and Safety Manager**

Denis Chin Yung Chien is our Quality Assurance and Safety Manager. His role is to ensure the health and safety of people as well as reduce the cost of project by early identification of risks. He plays a vital role to make sure the safety procedures and checks are applied during design, feasibility and construction process. He has been involved in various projects such as structural engineering, geotechnical engineering, water supply, stormwater and sewerage design and other civil engineering based design projects. A wealth of experience in occupational health and safety standards allows him to solve the safety problems being faced.

### **Geotechnical Manager**

John Smith is our Geotechnical Manager. John has a long and varied experience with geotechnical works, with projects such as the Snowy Mountain Scheme and Hoover Dam bolstering his resume. Through his experience John is able to offer a keen insight into all geotechnical works and uses these skills to lead his team with passion. Johns role within the company structure is to lead all geotechnical works while advising other design groups on geotechnical issues with their designs.

## **1.3 Company Services**

DPC Engineering provides a wide range of engineering services, our broad and varied array of services allows us to tackle even the most complicated projects. Our Key areas of expertise are listed below:

### **Urban Planning**

- Land use planning
- Landscaping, park and recreation design

### **Structural Engineering**

- Reinforced concrete design
- Post-tension concrete design
- Steel and Timber structures design
- Bridge and tunnel structures design

### **Transportation Engineering**

- Urban roads and highways design
- Traffic analysis
- Railway design
- Public transportation planning

### **Water Resource Engineering**

- Water sensitive urban design (WSUD)
- Stormwater analysis and drainage design
- Water supply and sewer system design

### **Geotechnical Engineering**

- Underground tunnelling design
- Dam slope stability design
- Retaining wall design
- Resident footing design
- Pavement design for high and low volume roads

## Environmental Engineering

- Environmental management system design
- Waste management system design
- Sustainability and environmental risk analysis

## Façade engineering

- Façade design – curtain wall systems, cable net structures with glazing, double skin facades, glass fin walls, glass fibre reinforced concrete cladding (GRC)
- ESD design – thermal comfort optimisation, energy efficiency and sustainability analysis, green building design
- Acoustic design – environmental impact studies, building internal and external acoustic analysis

## 1.4 Previous Project Experience

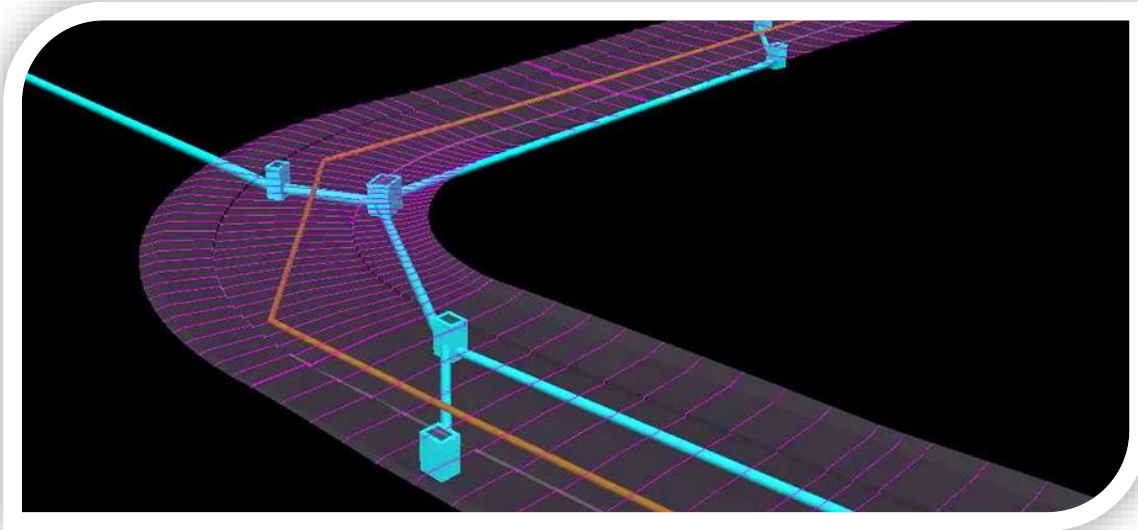
### Whyalla Hospital Cancer Wards – Steel and reinforced concrete



Whyalla Hospital is part of the Flinders and Upper North Region Services. It provides different kind of services which benefits the surrounding areas. In this project, DPC Engineering have been assigned to design the structural steel members of the cancer wards, reinforced concrete floor slab, band beams, columns and footings. We are proud of our design which met the architectural intent and complied with AS1170, AS3600 and AS4100.



## Strathalbyn Water supply and Drainage system



Strathalbyn is a residential subdivision located in South Australia. It is an exclusive residential land development located about 60km South East of Adelaide CBD. There are 123 residential allotments in the overall division. DPS engineer have been engaged as water engineer consultants and provide services to stormwater drainage design, sewerage system design and water supply system design. A cost estimate was also provided to assist the Client for further development. DRAINS and EPANET were used for computer analysis in this project.

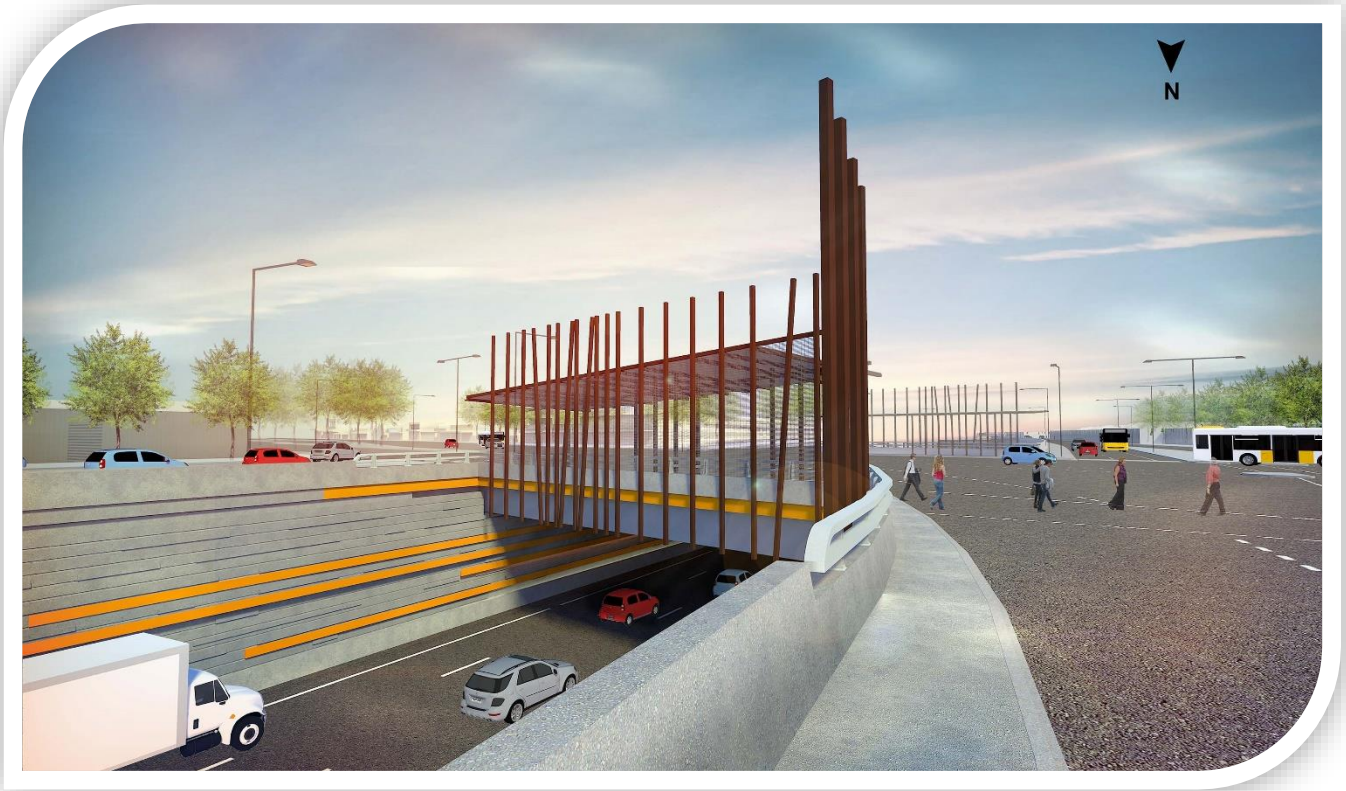
## Noarlunga Rail Line No.59 Extension



As part of 30 years plan of greater Adelaide, a 5.7 km extension of the dual track rail was proposed from Noarlunga Centre Railway Station to the Station District Centre. This project is funded by South Australia Government. The public transport rail services was targeted to have significant improvement for the community in the rapidly expanding southern suburbs. In this project, DPC Engineering were responsible to design a footing to be effect and economical. We have also undertaken further design in the retaining wall design between the rail line and the station platform.



## Torrens Road to River Torrens



As part of the 30 years plan of greater Adelaide the Torrens Road to River Torrens project, a 4km section of South Rd was redesigned to encompass a lowered motorway, four major road overpasses and a rail over pass. With a project value of \$890 million this is one of the largest infrastructure upgrades in Adelaide history. This project represents a considerable achievement for all parties involved.



## Adelaide University Medical and Nursing School (AMNS)



Located in the Adelaide city's west end, this 246 million project is formed part of South Australian Health and Biomedical Precinct (SAHBP). The facility is built to transform health sciences education, research and patient care. Currently opened in February 2017, the building provides supports to medicine, nursing, dentistry students and about 400 health sciences and researchers. DPC Engineering was involved in design and develop external façade systems.

## New Bendigo Hospital Stage 1



The new Bendigo Hospital is the largest regional hospital development in Victoria, Australia. It contains 372 inpatient beds, 72 same-day beds, 80-bed psychiatric inpatient unit and 11 new operating theatres. This 473 million major government project has finished its first stage on late 2016. DPC Engineering has involved in designing glazed façade component of the main building.

## **1.5 Quality Management System**

DPC Engineering is committed to the systematic management of quality by all staff within the organisation across our full range of technical and administrative activities. We also have an effective system which demonstrates conformance. The proposed feasibility study will be undertaken under the umbrella of DPC Engineering Management System which meets and exceeds the following quality assurance standards; ISO9001, ISO14001, AS/NZ4801 and OHAS18001.

If successful DPC Engineering will provide a detailed quality management system plan with a refined focus to match the project at hand. This quality management system would be available for review by the client upon successful award of the feasibility study.

As part of the system, DPC Engineering has formulated a Quality Policy. At DPC Engineering we will:

- a) Determine the processes necessary for the project and their application throughout the project
- b) Determine the sequence and interaction of these processes
- c) Determine criteria and methods required to ensure the effective operation and control of these works
- d) Ensure the availability of resources and information necessary to support the operation and monitoring of these processes
- e) Procedures are in place to measure, monitor and analyse these processes, and implement action necessary to achieve planned results and continual improvement

To satisfy the client's needs, DPC Engineering has established a framework for identifying client requirements, they are:

- a) Product or service requirement specified by clients, including the requirement for availability, delivery and post delivery services,
- b) Requirements not specified by clients, but necessary for intended or specified purpose or use, where known
- c) Statutory and regulatory requirements applicable to services, and
- d) Any other requirements considered necessary by DPC Engineering

DPC Engineering has also established procedures for the identification, verification and storage of client property, provide for incorporation into the client's orders or related activities.

## 1.6 Policies

DPC Engineering prides its self on its comprehensive and modern set of company policies, this set of policies defines the way in which we operate as a company. It guides our decisions in both our planning and engineering ventures.

### 1.6.1 Work Health and Safety Policy

The vision of DPC Engineering Group is to create a working environment where all persons; including employees, general public and visitors can go home safely. At DPC Engineering Group; we demonstrate our commitment to this through our Work Health and Safety (WHS) management system of which meets or exceeds the Work Health and Safety Act 2012.

DPC Engineering Group is committed to making our workplaces safer by:

- Ensuring the executives and managers are aware that they are responsible for the health, safety and welfare of their teams and other employees
- Providing a safe work environment and safe equipment
- Providing enough and appropriate information, instruction, training and supervision to all employees
- Managing risk in a way that eliminate before minimize through early intervention in planning and design
- Takes account the capabilities of the people by maintaining a safety management system
- Create a just and fair working culture by encouraging all employees to report any incidents they encounter immediately
- Consulting with workers on health and safety matters
- Planning, measuring and reviewing our performance against our objectives to ensure that our WH&S procedures are in a safe and proper manner
- Providing health services to all employs

Our WH&S policy demonstrates the commitment of DPC Engineering group in ensuring the health and safety at work is paramount to our organization. We recognize our success is contributed by an effective health and safety culture. We believe that safety enables efficiency and productivity and drives better business outcomes.

## 1.6.2 Environmental Policy

Proudly, the DPC Engineering group provides a wide range of engineering solutions, which are friendly and have low impacts on environment. An essential assessment, which are used to evaluate both long-term and short-term environment problems, is carefully taken consideration for each project of the company.

Being conscious of the environmental problems which are closely linked to each project plays a vital role in civil engineering field. The application of Environment and Sustainable policies contributes to a reduction in both long-term and short term environmental impacts. An environmental management system (EMS), which is known as a distinctive tool to manage the impacts of different organisation's activities on the environment, should be highly recommended to aim at reducing environmental impacts after the construction progress.

Our group attempt to improve the quality of the projects, while still complying with the environmental laws, legislations, and policies. A training with the objective of providing accurate assessments as regards to each project will be held for employees who work under the supervision of the Environment Management team.

As part of this Environmental Management System, DPC Engineering Group's focus will be to:

- Comply with Australian Government environmental policies, legislation and regulations
- Consider sustainability issues in the preparation and management of DPC Engineering Group constructions and operations
- Prevent pollution; minimise construction wastes and greenhouse gas emissions; and minimise consumption of water, electricity and gas energy etc.
- Set and review environmental objectives and targets frequently
- Perform the principles of the Environmental Policy during procurement procedures
- Announce and communicate the environmental policy and environmental management system to contractors, consultants and staff
- Training in these principles to ensure staff are aware of their environmental responsibility
- Apply energy-saving technologies and sustainable resources to attain expected outcome
- Monitor the achievements of company regularly for improvement of environmental performance and report to government and contractor

### 1.6.3 Stakeholders Policy

At DPC Engineering we focus to promote an environment where all the concerns and aspirations of the stakeholders are acknowledged. The Stakeholder's concerns will be assisted appropriately and at all times our key Stakeholders will be aware the effect of the project on them, as we believe in maintaining transparency.

Our Key stakeholders includes:

- Department of Planning, Transport and Infrastructure.
- City of Marion Council
- Local Business
- Local Residents

Our Key Stakeholder's Policy will ensure the following:

- We will work in collaboration with you so that all the objectives are well satisfied.
- We will provide full empowerment to the stakeholders and implement their decision when necessary.
- All the actions related to our Project by stakeholders will be supported and a necessary feedback will be provided.
- It will be our responsibility to ensure that efficiency and effectiveness of the project achieves high standards at all times.

Our Key Stakeholder's Policy will require a regular interviewing session. In these sessions they will be interviewed in accordance to their concerns about our Project. Stakeholders will have full authority to stop the interview whenever they require. During the interview sessions all the stakeholders are expected to answer range of different questions, based on these answers project will be modified if required. This practice can benefit in finding problem solutions and avoid any potential risk allied with our project. In addition, a Stakeholder's table will be maintained throughout the project for our record for which an additional meeting session may be required occasionally.

## 1.6.4 Community Engagement Policy

### **Purpose**

Professional and constructive engagements with clients has successfully led into an understanding of clients' concerns and needs, which has happened to be a fundamental part of providing a better service for clients.

DPC Engineering has committed to using the community engagement policy to:

- Enhance the involvement of clients about their understandings of the problems and restrictions, opinions, concerns and strengths
- Help company to develop a better understanding of concerns, needs of clients
- Help to search and develop better strategies or solutions which meet the needs and concerns of clients

### **Policy**

The community engagement method will be implemented when:

- Required by legislation
- The issues, needs and priorities for clients need to be identified
- Any issues or proposal changes will have potential impacts on the health, safety or well-being of any other parties
- Feedback on the service has provided to clients and any recommendations of improvements for the future projects

### **Principle**

- Community engagement policy demonstrates the principles that support the company's engagement activities and the methods adopted to engage and consult with clients
- Make sure that enough resources has been to devoted to all the engagement activities
- In every aspect of a project, a broad involvement will from different parties will be encouraged and needed
- Company will take into all views and concerns into the considerations regarding a certain project
- Company has always devoted to developing and adopting an innovative engagement manners, and using such to advance community engagement in future

### **Community Engagement Methods**

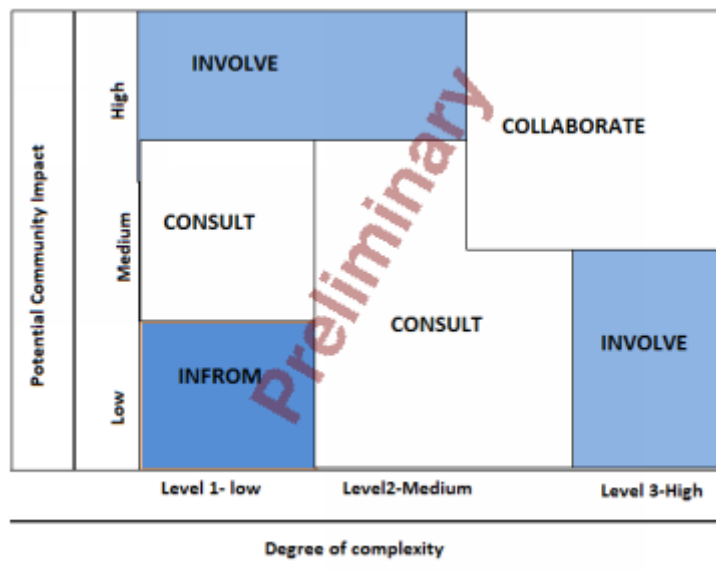
At DPC Engineering, different levels of community engagement has been assigned to a corresponding level of community involvement required based on the nature of the issues. From

international association for Public Participation (IAP2) the following five levels of the engagement are adopted just as other companies and city councils adopted all around Australia

- Inform: One-way communication providing balanced and objective information to assist understanding about something that is going to happen or has happened.
- Consult: Two-way communication – Two way communications designed to obtain public feedback about ideas on rationale, alternatives and proposals to inform decision making.
- Involve: Participatory process designed to help identify issues and views to ensure that concerns and aspirations are understood and considered prior to decision making.
- Collaborate: Working together to develop understanding of all issues and interests to work out alternatives and identify preferred solutions.
- Empower: The final decision will be made in the hands of all party concerned

### Community Engagement Matrix

DPC Engineering has committed to develop community engagement matrix to illustrate the following level of engagement appropriate for different degrees of complexity.



### Review and Evaluation

DPC Engineering reserves the right to review the elements of the consultation process to suit the requirements of any particular issue.

The Policy will be reviewed in line with Council's Corporate Governance Framework.



### 1.6.5 Media Policy

DPC Engineering is an established and highly respected company, we are aiming to have reputation for providing excellent, professional services and we enjoy strong relationships with our clients as their destination for effective and economic engineering solutions. This policy covers all external news media including broadcast, electronic and print.

The purpose of media policy is to:

- Assure that information disclosed by DPC Engineering is timely, accurate, comprehensive, authoritative and relevant to all aspects
- Increase public awareness and understanding of DPC Engineering Company, including the service we provide and the attitude we have
- Promote a positive public image of DPC Engineering and the work we do to the audiences that are important to DPC Engineering
- Provide guidelines for employees using social media at work and at home by understanding the difference on behalf of the company and personal

DPC Engineering as a highly proud company, we are required to follow media policy guidelines:

- Accuracy and compliance with professional rules of conduct and ethics should be encouraged as well as honest identification on social networks to create trust
- Posts should be informative, brief and direct so that they add value to a discussion and employees reminded to be professional, respectful and discreet
- Employees should be encouraged to respect their audience and refrain from controversial or potentially inflammatory subjects, avoid personal attack or hostile communication
- Reminders about not disclosing confidential information and respecting privacy should be included
- The importance of respecting copyright, trademarks, and trade practices law, professional rules regarding advertising and legal marketing should be emphasized
- Provide information about privacy settings on social networking sites and a section for frequently asked questions

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## 2 Scope of Works

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### 2.1 Project Overview

DPC Engineering understands that this project will be a critical road and rail infrastructure upgrade for the people of Adelaide and will further the progress of the "30-year Plan for Greater Adelaide", while providing a much-needed economical injection into the local economy.

Linking this project to the 30-Year Plan for Greater Adelaide means that the project outcomes and goals are clearly set out. DPC Engineering has highlighted the key project goals and will work to ensure they are met to the highest of standards as set out by our stakeholder engagement policy and quality assurance policy.

As a diverse and experienced company DPC Engineering appreciates that a project of this nature not only needs to be functional, but it needs to fit into the surrounding environment, provide the client and stakeholders with a piece of infrastructure they can be proud of and improve the liveability of those utilising it, all while being environmentally and economically sustainable.

DPC Engineering is tendering to complete the feasibility study for the Diagonal Road and Oakland's park rail intersection grade separation. This grade separation will allow trains and road users to operate independently of each other in this location, this will in turn increase traffic flow rates, allow trains to run in a more consistent manner and remove potential safety risks. The grade separation will form part of the 30-year Plan for Greater Adelaide, which is designed to propel Adelaide forward towards a more robust and advanced traffic network. The plan also aims to link the City of Adelaide as whole together, to promote growth in the economic sector while supporting Adelaide's local industries.

The Diagonal Road Oakland's park rail intersection is one of the more complicated rail intersections within the Adelaide region, due to this level of complexity there will need to be a considerable amount of thought with regards to the way in which the new intersection will operate. DPC Engineering understands the complexity of the situation and will take steps to ensure that all aspects of the project are considered during the feasibility.

## 2.2 Extent of feasibility study

The proposed feasibility study will investigate the following 4 concepts:

Overpass rail  
with at-grade  
Diagonal Road

Overpass of  
Diagonal Road  
with rail at-grade

Underpass rail  
with at-grade  
Diagonal Road

Underpass of  
Diagonal Road  
with rail at-grade

Upon award of tender, DPC Engineering will:

- Provide a detailed project program and plan for the whole duration of feasibility study at the beginning of the feasibility study
- Review provided documentation as listed in Appendix B and Appendix C of tender brief
- Site inspection with the client
- Project meetings with the client and the Project Management Team (PMT) on a weekly basis
- Undertaken feasibility study over 4 proposed options as listed above against technical, environmental, social and economic aspects
- Assess and evaluate pros and cons of each option and propose our preferred option(s)
- Prepare cost estimates and indicate comparative cost comparison between options
- Provide project specific quality management system document and demonstrate satisfactory level of implementation to your requirements
- Undertaken an environmental assessment and prepare environmental plan with environmental impact assessment report
- Prepare and submit final report of the feasibility study with our recommended option(s)

At the end of feasibility study, DPC Engineering will submit:

- Detailed document of DPC Engineering quality Management System and implementation
- Environmental Plan with Environmental Impact Assessment report
- Final feasibility study report with recommendations
- An offer to undertake the Concept and Detailed Design

## 2.3 Concept Overview

On initial investigation DPC Engineering has determined the four concepts listed above to be the most promising when considering all constraints.

### 2.3.1 Rail overpass with Diagonal Road at-grade

This concept consists of a rail overpass with Diagonal Road running at-grade and will require a considerable redesign of the infrastructure in this area with regards to the rail. A rail overpass will mean that the Oaklands Park railway station will need to be redesigned and upgraded. Leaving diagonal road at-grade will mean there is considerably less work to be done in this space as much of the current infrastructure could be repurposed.

#### Advantages

- Allows for the current alignment of Diagonal Road to remain the same
- likelihood of the need to relocate services is minimised
- Minimal disturbances to traffic during construction
- Land acquisition minimised

#### Weaknesses

- Not seen as an appealing sight by some members of the community
- Project Cost
- Project Duration

### 2.3.2 Rail underpass with Diagonal Road at-grade

Concept two has the rail as an underpass with Diagonal Road at-grade, this will require a considerable number of reworks of the current rail infrastructure along with any underground services in the area. Once again this will leave the diagonal road infrastructure mainly intact and thus reduce the scope of works in this area.

#### **Advantages**

- Clean and aesthetically pleasing
- Minimising aquired land
- Minimal reworks to Diagonal Roads current Alignment

#### **Weaknesses**

- Possible service relocation issues
- large volumes of cut spoil
- possible envirmental issues with contaminated spoil
- issues with stormwater
- Safety conserns

### 2.3.3 Diagonal Road overpass with Rail at-grade

Running Diagonal Road as an overpass would require a considerable redesign of the intersection with Morphett Road, however would alleviate some of the construction interface issues with the rail line during the construction phase.

#### **Advantages**

- Minimise delays to rail during construction
- Miniman rail interface
- Rail reworks minimised

#### **Weaknesses**

- Not seen as an appealing sight by some members of the community
- Project Cost
- Project Duration
- Complicated road alignment

### 2.3.4 Diagonal Road underpass with Rail at-grade

Based on an initial investigation and analysis, an underpass of Diagonal Road is the least desirable of the four options, this is due to the disruptions it would cause to both road and rail traffic while also requiring a considerable service relocation procedure. However, this will be explored further in the feasibility study before ruling out this possibility.

#### **Advantages**

- Clean and aesthetically pleasing
- Minimising acquired land
- Minimal works to rail

#### **Weaknesses**

- Possible service relocation issues
- large volumes of cut spoil
- possible environmental issues with contaminated spoil
- issues with stormwater
- Safety concerns
- Complicated road alignment

## 2.4 Required Documentation

The proposed feasibility study is to be based on the following documentation:

- Available documentation listed in Appendix B of tender brief (2017 Tender Stage Information.pdf dated March 2017)
- Previous strategic studies in Appendix C of tender brief (2017 Tender Stage Information.pdf dated March 2017)

If required, we will also consider relevant documents from Rail Commissioner, Commissioner of Highways and City of Marion to ensure our design/study is consistent with their requirements.

Note it is not DPC Engineering's responsibility to verify the accuracy of the data provided; DPC Engineering shall take no responsibility for losses in any regard caused by faulty, incorrect or misleading data.



## **2.5 Proposed methodology**

The proposed feasibility study will be split into four phases: high-level impact analysis, traffic modelling, engineering design evaluation and cost estimate.

### **Phase 1: High level impact analysis**

In this phase, we will analysis all four options as listed in scope of works against the following criteria: safety, accessibility, environmental, constructability, social, economy and future proofing. Six of our technical teams (structural, services, environmental, urban planning, transportation and safety) will examine each option and evaluate the impacts in their respective fields. A multi-criteria matrix will be generated to summarise the level of impact of all options. Based on the overall level of impact, we will determine and recommend two preferred options for the next phase study.

### **Phase 2: Traffic modelling**

Traffic modelling using software will be undertaken to two selected options from phase 1. The purpose of this phase is to verify if the preferred options will meet the traffic demand for the next 20-25 years, as required by the 30-year plan for greater Adelaide.

### **Phase 3: Engineering design evaluations**

Based on high level impact and traffic modelling analyses the two chosen options will be evaluated on its feasibility with regards to the engineering design, this will include constructability and safety in design. This section will form the majority of the feasibility study and will be the driving factor determining the final design concept.

### **Phase 4: Cost estimate and final feasibility report**

Indicative costs will be prepared and compared between two alternatives for determining our final recommendation. This will load onto the final feasibility report, where DPC Engineering will provide our recommendations and initial design brief.

Seven of our technical teams will provide their professional opinions throughout the duration of this feasibility study, to enable us to evaluate and critique all available options for the redesign of this road-rail intersection.

## 2.5.1 Structural Evaluation Process

DPC Engineering has developed procedures and processes to determine the most appropriate solutions in designing and building different structures such as bridges, tunnels, roads. Regarding to our structural team, we all have a profound knowledge base and experience to tackle every tricky problem in designing, drafting and construction. Our structural team plays a key role in the feasibility study of the Oaklands Park Grade Separation so as to provide a proposed approach for the stakeholders. We commit that the solution will be cost-effective, high-quality and environmentally friendly while meeting or exceeding the requirements of Australian Standard and complying with the policies of the local government asset authorities.

### **Objectives**

The general objectives of DPC Engineering's structural team is to take the responsibility in sustainability, durability, serviceability and structural integrity of the proposed 30-year plan and to keep the project on the track. To do that, our group will make sure that we can meet the requirements of the clients for the proposed Oaklands Park Grade Separation. List of objectives can be addressed as follows:

- The final design meets 30-Year Plan for Greater Adelaide
- An increase in traffic generation by developments
- An increase in the capacity and an improvement traffic flow and road & rail safety within the Oaklands Park for the next 20 to 25 years
- An improvement in accessibility across the rail and corridor and the design outcomes of the Adelaide to Marino Rocks Greenway
- An improvement in rail-bus integration

### **Assumptions**

With regards to the structure of the Oaklands Park Grade Separation project, a variety of assumptions that are introduced by the structural team are provided as follows:

- Study area comprising of locality, places of interest, zoning, property (year built), heritage and 30 Year Plan for Greater Adelaide (map extracts) should be provided with high accuracy and latest versions
- A number of topographic surveys is under the format of 12D and or CAD
- A couple of existing conditions including both geotechnical and environmental such as the report of existing geology, the plans of existing noise contour, DPTI Road Traffic Noise Guidelines and DPTI Vegetation Removal Policy should be also given
- Some traffic documentations are considerably necessary such as AADT design volumes and the results of DPTI turn survey

## Considerations

A wide range of different types of loadings that impact on the Grade Separation will be carefully taken considerations by the DPC Engineering group in general, and the structural team in particular.

List of loadings can be shown as follows:

- Permanent loads (Dead load)
- Transient loads (Vehicular live load, vehicular braking force, pedestrian live load, wind load and seismic load)

A wide range of different types of materials with the corresponding properties such as mass, density and volume will be totally considered for the structure's use. Also, the specialised equipment are taken into account during the construction's progresses.

Our group strive for creating the highest appropriate solution that can meet a number of requirements as shown below:

- The time for track shutdowns, which are greater than 60 hours, should be minimized, even avoided
- The weekday peak services should be maintained to avoid congestion
- The restrictions on weekday inter-peak services should be limited
- Single line running is no longer available

## 2.5.2 Services Evaluation Process

Utility services such as water, gas, electrical supplies as well as sewerage facilities may cause a temporary inconvenience to the local residents during this project. In order to avoid this situation, we may have to relocate the current services temporarily or in some cases permanently. In such circumstances, it can be a better option to upgrade these services such that they are compatible if the region has an increased population in the future. This upgrade can be done simultaneously with our main project. There will be a significant increase in cost of this project if an alternative source for the services has to be provided.

In case of constructing an underpass for the project, excavation would be an inevitable aspect and with this present services like water, gas and sewerage might have to be relocated permanently. Our team can assure that with our experience in developing innovative ideas, a relatively convenient and efficient mode of services will be provided in this region if relocation is a requirement. Upgrade can include a better planned sewerage design which will have an increased capacity. Water supply in this region can also be enhanced by our innovative design.

### **Objective**

The main objectives of services team is to provide access to the routine services in a cost effective yet efficient manner.

- Reviewing existing services plan in the region.
- To facilitate the local population with an upgrade in services utilities
- To avoid any inconvenience in supply of services during upgrading process
- Designing a system of gravitation flow within the sewerage design
- Water flow management maintained appropriately
- Provide a safe work place environment
- Ensure that the service design do not obstruct with another design team.
- Ensure all the complaints regarding the service allocations are well attended

### **Assumptions**

- Sufficient work force is available
- Design is approved by City of Marion Council
- A detailed map of service locations is provided
- Services will not have any constraints in case of relocation

## Considerations

Sewerage and gas line design –

During the project, a suitable alternative to the water supply in this region will be provided if required. The main aspect of this design is to ensure that the local residents have access to these services while the project is in progress. Secondary aspect is to provide an upgrade to the present design. The following considerations will be adopted:

- Storm water, sewer and water supply pipes will be in a constant supervision until the end of our project
- A detailed sewerage design will be prepared by our team proficient in using sophisticated software such as Drains and HEC-RES
- With the underpass alternative a major relocation of present sewerage and gas design will be required. An upgrade to the current system is possible simultaneously with relocation process
- In case of the overpass alternative the both the services utilities will not require to be relocated, but an upgrade will be a necessary aspect
- Upgrade in the system with capacity to withstand 30 year ARI would be sufficient for this project
- Storm water data has to be carefully studied and while relocating this service, its temporary alternative process should have sufficient capacity to store water to avoid any overflowing situations
- A temporary gas line will be provided to the residents in case if underpass design is considered
- Gas lines will have to be maintained regularly during the project to avoid any potential risks

## Electricity

All the electric supply in this region should be considered as this sector is likely to be affected with our project. The following considerations will be adopted for maintaining electrical supply design:

- All the electric lines can be upgraded to an underground system
- In both the cases of under pass as well as over pass, electric lines will have to be relocated
- Electric supply design should meet up to the South Australian Power Networks' Standards
- An alternative power source has to be provided while the service is being upgraded
- Alternative power source should have a convenient installation process
- While relocation of the railway electric lines a transportation can be affected and an alternative during this time frame has to be provided

### 2.5.3 Environmental Evaluation Process

The scope of work relating to environmental management is to conduct a feasibility study for the assessment of environment issues which include four alternative concepts. DPC Engineering Group will implement a pre-construction planning and design include environmental assessment, risk assessment and management. For the next stage, our company will carry out an environmental management plan includes environment management plan, best practice documents and segment environmental control plan. Following this, waste minimisation will be elucidated, and all possible environmental hazards that due to the construction of project for 4 different alternative concepts will be identified, our group will analyse the extent of different impact of hazards for these alternative concepts and how to minimise the hazards to select a best construction concept. After that, our manager will determine how many people we need for the environment management.

#### Pre-construction planning and design

The approach that integrating environment protection at the planning stage of project can avoid and minimise pollution to achieve a more cost-effective design once the project commences. It is important to conduct an environment assessment that identifies the vulnerable environment parts could be damaged during constructions, and risk assessment is a constructive way to approach the respect of site management.

#### **Environmental assessment**

An initial assessment of the project should be conducted to identify any sensitive areas include:

- Endangered flora, fauna and tree
- Groundwater recharge areas

Due to the location of construction site where near houses, schools, shops and hospitals, the influence of dust, noise and vibration on the health of adjacent residents will be included in the assessment.

#### **Risk assessment**

Information from the environment assessment is required with the purpose of conducting a risk assessment. The initial risk assessment should be reviewed regularly, and this assessment will be a major part of the environmental management system (EMS).

Risk assessment can be divided into six steps which is information gathering, hazard identification, hazard analysis, consequence analysis, determination of overall risk and ranking.

#### **Risk management**

Applying a risk management will develop an action plan includes measures and strategies to reduce the risks to adequate levels, and it should be applied at the beginning of construction planning for the most profitable environmental outcomes.

Risk assessment and management should be updated frequently during the construction to ensure the project on the right track. Following this, the risks can be minimised by using several methods. For

example, the design can be modified to avoid risk, commence rehabilitation immediately when works are completed to reduce risks such as erosion and dust, and manage risks better by installing control measures.

### Environmental Management Plan

As mentioned before, environmental management plan can be divided into 3 parts: environmental management plan, best practice documents and segment environmental control plan. The purpose of this sector is to reduce the detrimental impact of construction activities on the environment by developing an environmental management plan.

More simply put, the environmental management plan should be prepared before the construction starts, and risk management measures can be implemented when the environmental site and risk assessments have been completed. Meanwhile, use best practice documents as a part of environmental management plan to address significant environmental risks for the next stage.

The total project area can be divided into segments for better management, and a control plan should be applied for each segment. DPC Engineering Group will follow the segment environmental control plan by dividing it into several aspects such as stormwater management, land disturbance and rehabilitation.

### Waste minimisation

Construction waste is a mean issue that cause negative impact on the environment during the construction, DPC Engineering Group will comply with the principles of sustainability by minimising waste generation and greenhouse gas emissions, and maximising reuse of materials. Following this, waste avoidance, reuse and recycling can be adopted to minimise the waste that discharged to the environment, and there are four effective measures list below:

- Reinforce the enforcement for waste avoidance, reuse and recycling by carrying out a waste minimisation assessment
- Reducing wastes by selecting prior materials that are easy to be recycled or treated, or easy to dissolve or be absorbed in the environment
- Placing waste minimisation measures into the environmental management plan
- Using more advanced technology to dispose and minimise wastes properly on-site

### Environmental issues

- Overpass rail with at-grade Diagonal Road
- Underpass rail with at-grade Diagonal Road
- Overpass of Diagonal Road with rail at-grade
- Underpass of Diagonal Road with rail at-grade

## Land disturbance

Land disturbance has always been a difficult problem for construction project, activities such as removing vegetation can make soil susceptible to erosion, and soil removed by erosion from airborne can create a dust problem. By reducing the water lose from soil can alleviate the problem of soil erosion, and the measures that deliver the impact of land disturbance will be created as part of the segment environment control plan.

Erosion minimisation measures:

- Phasing the construction schedule to minimise land disturbance in the planning and design stage
- Avoid clearing ranges of extremely erodible soils and steep slopes which are apt to wind and water erosion, particularly focus on slope protection
- Minimising land clearance
- Rehabilitate cleared areas of land on time
- Set distinct haul roads for large construction vehicles

## Management of contaminated stormwater

Eroded soil can contaminate stormwater during the land disturbance, and the water will be polluted when contaminated stormwater enters stormwater drainage system. The factors such as soil type, rainfall patterns and topography need to be considered when choosing applicable controls and assuring the designs are acceptable.

Measures to minimising sediment loss:

- Intercept drains or building diversion banks to ensure that drains is disposed smoothly without causing erosion
- Install new stormwater drainage system before any land disturbance happens
- Retard water flows by installing rock structures on site
- Scour flowing water by minimising continuous slopes

## Dust control

Due to the health protection of surrounding residents and environment, dust problems need to be reduced as important as erosion and sediment problems.

Measures for dust control:

- Apply dust suppression approaches to prevent the generation of dust
- Avoid construction schedule overlap with the drier months of the year
- Sprinkle water to haul roads regularly
- Keep soil surface rough to reduce the wind velocity
- Where possible, build wind fences to reduce dust



## **Noise and vibration**

Noise and vibration has always been an annoying problem during the construction, sometimes the noise can affect work and rest of surrounding people. Therefore, all noise annoyance should be reduced from construction activities, blasting, construction vehicles and machinery within the site.

Measures to minimising noise and vibration:

- Enclose a specified place for noisy equipment
- Assemble applicable muffles on the construction vehicles
- Provide sound absorbing baffles around the construction site
- Restrict operating hours to a reasonable timeframe
- Inform surrounding residents in advance in case of any out-of-hours work
- Minimise ground and air vibrations by selecting best construction concept

## Other Environmental Issues

### **Emergency procedures**

All staff need to be trained to deal with any emergency that copes with environmental damage, and contact EPA immediately when emergency occurs.

### **Air Quality**

Exhaust material produced by chippers, exhaust gases produced by vehicles and machinery are the other sources of air pollution on the site other than dust, DPC Engineering Group will ensure no health risk result from exhaust gases.

Measures to ensure air quality:

- All machinery and vehicles should be erected with high standard emission control equipment
- Try to avoid visible smoke from vehicle and machinery engines

### **Litter**

Litter is commonly caused by littering of staff and absence of litter bins on the construction site. DPC Engineering Group will make sure all litter is processed in responsible manner to protect site environment.

Measures to avoid litter:

- Provide enough bins for staff and workers at indoor and crowded places
- Conduct staff to be aware of avoiding littering and keeping site clean

### **Storage of chemicals and fuels**

Improper storage of chemicals and fuels on the site can cause serious environmental risk, DPC Engineering Group will ensure the safety of chemicals and fuels storage, and prevent leakage to avoid unnecessary losses.

Measures to avoid environmental damage from fuels and chemicals:

- Minimise the storage of chemicals and fuels
- Carry out an emergency plan to dispose spills and avoid environmental damage at the furthest

### **Road cleaning**

During the construction, trucks will need transport the soil and construction material off the site, DPC Engineering Group will prevent the soil that deposit on the roads and keep the road conditions clean and tidy.

Measures to keep roads clean

- Set up rumble grids and wheel washes at road crossings
- Once the soil being carried away, all loads need to be covered for disposal

After above analysis, a fitted construction concept can be selected for the next stage which are overpass rail with at-grade Diagonal Road and overpass of Diagonal Road with rail at-grade. DPC Engineering Group will make a final decision as to the preferred concept.

## 2.5.4 Urban planning and community Evaluation Process

### **Objectives**

The objective of urban design and landscaping is to make sure that the proposed design will be well integrated within the surrounding infrastructure and provide a user friendly product for all stakeholders.

The flowing benefits could also derive through urban design and landscaping management:

- Incorporating 30 years plan of greater Adelaide and development planning of city of Marion
- Make sure that the expectations of state government and local residents are met
- Environmental friendly
- Decrease the negative impacts towards the neighbouring areas
- Enhance the passenger amenity and local aesthetic

### **Process**

At DPC Engineering, the sophisticated and talented urban planning and landscaping team has committed to working consistently with transportation and structural and environmental team to make sure that the potential designs developed will meet with expectations of state governments and local residents in this project area. To doing so, the urban design and landscaping management has been developed as follows, which will be a core compartment of the feasibility study in the later stage.

- Identify the concerns and expectations, in terms of urban design and landscaping, of different parties including from state government level to local residents dwelled in this area and neighbour area. In order to achieve this goal, the engagement policy will be implemented
- Once we know all the concerns and expectation regarding this project the urban design and landscaping team will work with other teams to develop different solutions that will address every concern and meet every expectation of different parties
- After different solutions was developed the reviews process will be implemented to eliminated the potential options with all the party concerned until the best solution has been chosen

### **Considerations**

Urban planning and landscaping team believed that whether meet of expectations of parties from state government level and local resident or not is a vital part to determine this project is successful

or not. Therefore; within our team the urban design and landscaping management has been introduced as follow to address that.

We also believe that the during the construction phases there will be disturbance to the local area in term of the land using, we will also try to resolve or mitigate that issue with taking into concerns form all the party involved.

### 2.5.5 Transportation considerations

As DPC Engineering provides a wide range of engineering service including transportation engineering, the transportation engineering team provides services on urban road and high way design, traffic analysis, railway design and public transportation planning. As the Oakland Park grade separation aims on 30-year plan for greater Adelaide, DPC Engineering Transportation Engineer design team had a comprehensive thinking on the issue and gave our objectives and considerations in the following words.

#### **Objectives**

- A bigger road volume meets 30-year plan for Greater Adelaide
- A time saver arterial road intersection for drivers
- A higher flexible potential development area in the heavy traffic area
- A more convenient interchange for public transport users
- A more comfortable and friendly firsthand experience for pedestrians and cyclists
- A safer road condition for all road users

#### **Assumptions**

- Latest traffic data provided by DPTI and be used to conduct traffic analysis

#### **Considerations**

As descried in the documents of 30-year plan for greater Adelaide, in the next 15-25 years, more dwellings, people and job opportunities will allocate along the traffic corridor southern areas of Adelaide, then more people will use the traffic corridor which will cause problems and needs a upgrade work.

The current project area is an intersection of road and rail, when train comes, road is closed for train passing, the scenario would lead to traffic congestion at the area, and will be worse in the nest 15-25years. Proposed design option is to vertically separate road and railway to reduce congestion. Road traffic on these key arterial roads will not be delayed for closure reason, traffic will travel

smoothly as reduction of waiting time except for traffic lights at Diagonal Road and Morphett Road intersections, so it will help drivers to save a lot of time on road.

The road and railway mix design is limiting urban development at the moment, with grade separation, it will be easier and flexible to redevelopment to increase road capacity and rail service line abilities. And the area can be developed to an interchange of bus and train with more car parks for cars and bicycles, integrated bus bays and facilities and a on tangent track enhanced Oakland Station ensure a safe and efficient access to public transport users, which will attract more residents to use public transport and our city will benefit more from it.

On the other hand, current design makes the area complex and presents a higher risk to pedestrians and cyclists when crossing the road and rail intersection. With the vertical grade separation planning design, pedestrians and cyclists can benefit more from the friendly and comfortable road crossing path and Greenways by crossing without queueing a long time, as a result, less waiting time will help pedestrians and cyclists to reduce potentially hazardous as well. Meanwhile, there is a significant safety improvement from the vertically grade separation for drivers, they will benefit from it by highly reducing the potential collisions associated with crossing. Overall, new design will provide safer traffic area for car users, pedestrians and cyclists.

### 2.5.6 WHS considerations

DPC Engineering pride ourselves on our modern and comprehensive safety policies, safety in design is one of our foremost design criteria. Our company is committed in pursuing a high standard safety in design by evaluating all aspects of design with this at the forefront of our thinking, this will form a core part of our feasibility study.

A risk management approach is used by our group as follows:

- Identifying the foreseeable hazards associated with the design of the structure
- Assessing the risks arising from potential hazards
- Designing control measures to eliminate or minimise the risk
- Reviewing the control measures and making improvements where possible
- Documenting where and how risk was mitigated to improve future designs

### **Objectives**

The objectives of our safety in design policies is to eliminate and minimise the risks that there will be any sort of incident, during not only the construction phase of the project but for its foreseeable life span; including maintenance operations, general use and decommissioning.

Safety in design can bring a lot of benefits which include:

- Improving the useability of the structures
- Improving the productivity and reduce the cost needed
- Preventing injury or other incidents during the life span of the product

### **Considerations**

To prevent injury and incidents during the life span. There are a number of control measures that have to be implemented to make sure the structure is safe throughout the construction process. The control measures are listed as below:

- Provide a safety report that specifies related hazards to the design of the structure
- The design of the structure are checked by a group of specialist to make sure the structures are safe and rigid during the life span
- Structures or components used in the construction, end use and maintenance are tested beforehand to ensure they are strong enough to withstand the loads
- To ensure the structure that we have designed is both practical and safe to build and operate, a meeting is held every week
- A design report about the safety aspects of the design will be produced every month.
- Throughout the construction work, the design working group of DPC Engineering company will be located on-site so that we could be directly involved

### **2.5.7 Geotechnical Consideration**

DPC Engineering has an extensive knowledge base with regards to geotechnical engineering, with our in-house geotechnical engineering team we are able to communicate fluently with our other design teams; allowing us to form a more efficient and robust design process and structure.

DPC Engineering's in house geotechnical team is fully certified with a strong focus on quality and accuracy of design. This is achieved by analysing tasks at their onset and developing strategies to determine the most efficient and applicable solution.

### **Objectives**

- Review existing geotechnical data and reports
- Analyse soil profiles and makeup
- Verify soil bearing capacities in key areas
- Assess all constrains with each of the four design concepts
- Provide support to the other design team
- Determine approximate cut and fill volumes

## Assumptions

DPC Engineering's geotechnical team will assume that all relevant data provided by the client is correct and accurate and consistent with the relevant Australian Standards. Failing this DPC Engineering will need to undertake our own geotechnical investigations of the area in questions, at the cost of the client.

## Process

DPC Engineering will evaluate all soil profiles based on the data provided by the client, this data will be used to analyse the four concepts as outlined above. When analysing the four alternative concepts DPC Engineering will consider a series of geotechnical parameters to determine the most viable solution; parameters outlined below.

## Evaluation Parameters

- Performance of design with regards to the Australian Standards
- Ease of construction
- Complexity of design
- Functionality of design
- Level of waste material
- Relative cost of construction
- Relative construction time

The geotechnical team will interface with the other design teams to ensure that all information is shared, this will establish a base line for the other teams to work; particularly the structural and transport teams.

## 3 Cost and Resource Schedule

### 3.1 Contract value

DPC Engineering has evaluated the works to a contract value of \$xxx, inclusive of all works as previously listed. Any changes to the scope of works by the client will incur further costs, a schedule of rates can be found in Section 6: Conditions of tender. Any change of scope deemed to be greater than 10% of the initial contract value will require a contract variation.

### 3.2 Breakdown

Management			
Position	Rate	Hours	Total
PM	240	105	\$ 25,200.00
APM	200	105	\$ 21,000.00
<b>Total:</b>			<b>\$ 46,200.00</b>

Structural Design			
Position	Rate	Hours	Total
Manager	180	105	\$ 18,900.00
PE	150	105	\$ 15,750.00
PE	150	105	\$ 15,750.00
Grad	120	105	\$ 12,600.00
Grad	120	105	\$ 12,600.00
Grad	120	105	\$ 12,600.00
<b>Total:</b>			<b>\$ 88,200.00</b>



Services			
Position	Rate	Hours	Total
Manager	180	105	\$ 18,900.00
PE	150	105	\$ 15,750.00
PE	150	105	\$ 15,750.00
Grad	120	105	\$ 12,600.00
Grad	120	105	\$ 12,600.00
<b>Total:</b>			<b>\$ 75,600.00</b>

Environmental			
Position	Rate	Hours	Total
Manager	180	105	\$ 18,900.00
PE	150	105	\$ 15,750.00
PE	150	105	\$ 15,750.00
Grad	120	105	\$ 12,600.00
<b>Total:</b>			<b>\$ 63,000.00</b>

Urban Planning and Community			
Position	Rate	Hours	Total
Manager	180	105	\$ 18,900.00
PE	150	105	\$ 15,750.00
Draftsperson	130	105	\$ 13,650.00
Senior Architect/Urban Planner	180	105	\$ 18,900.00
Architect/Urban Planner	130	105	\$ 13,650.00
Grad	120	105	\$ 12,600.00
<b>Total:</b>			<b>\$ 93,450.00</b>

Geotechnical			
Position	Rate	Hours	Total
Manager	180	105	\$ 18,900.00
PE	150	105	\$ 15,750.00
PE	150	105	\$ 15,750.00
Grad	120	105	\$ 12,600.00
Grad	120	105	\$ 12,600.00
<b>Total:</b>			<b>\$ 75,600.00</b>

Quality Assurance and Safety			
Position	Rate	Hours	Total
Manager	180	105	\$ 18,900.00
PE	150	105	\$ 15,750.00
PE	150	105	\$ 15,750.00
grad	120	105	\$ 12,600.00
<b>Total:</b>			<b>\$ 63,000.00</b>

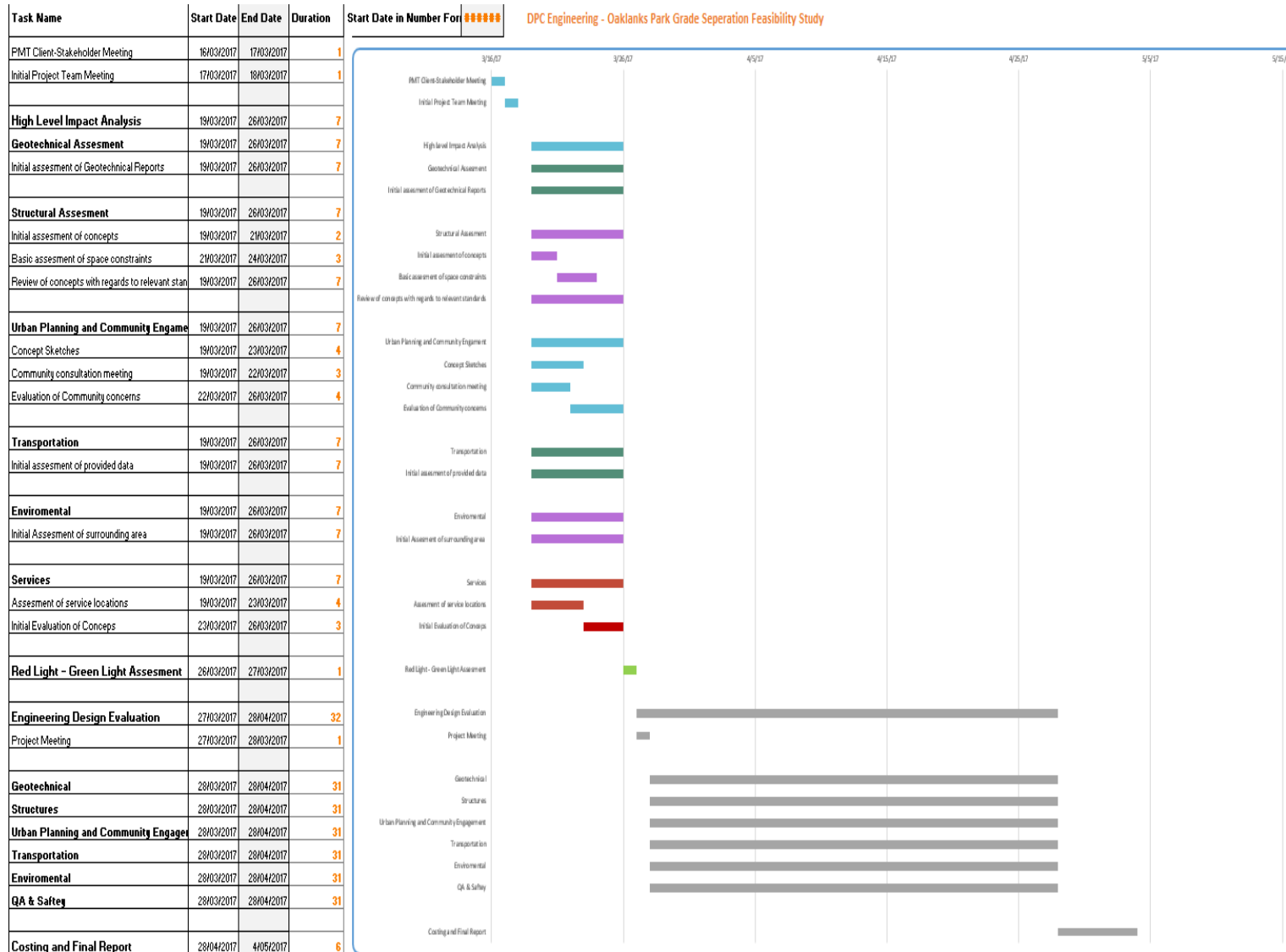
<b>Total Contract Value:</b>	<b>\$ 520,050.00</b>
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## 4 Program

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If awarded the contract for the feasibility, DPC Engineering will provide an in-detail program for the duration of the works. An initial program is shown below and provides an overview of where the majority of the works lies.



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## 5 Upon Completion of Feasibility

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If DPC Engineering won this tender and successfully completed proposed feasibility study, we are capable and would like to provide continuous services to next phrase of the project. At DPC Engineering, our Project Managers have extensive engineering consulting experience for many major projects in Adelaide, they are working closely with the Client to the services are delivered exceed Client's expectation. Our design teams are capable of design and prepare conceptual and detailed CAD drawings; as well as to carry out detailed calculation and draft technical specification. Our Environmental team can develop an Environmental Management Plan based on proposed feasibility study. Our goal is to meet Client's satisfactory and provide consistent high quality services.

If the Client decided to assign others for next phase of the project, the documentations provided by DPC Engineering at the end of feasibility study will ensure a smooth transition to both conceptual and detailed design of the project. DPC Engineering will also provide limited consultation for our feasibility study.

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## 6 Conditions of Tender

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### Assumptions and Limitations

Proposed feasibility study will be based on the documentation listed in section 2.3 of this proposal. It is assumed the data provided is up-to-date and valid in all respects. In the event of failure to comply due to out-of-date or faulty data, DPC Engineering shall take no responsibility and will be paid in full for our services.

### Contractual Obligation

DPC Engineering shall exercise the degree of skill, care and diligence normally exercised by consulting engineers and architect in similar circumstances.

### Additional works

For any work outside the scope of works listed above will be considered as additional, and will be charged at hourly rate as below:

<b>Position</b>	<b>Hourly Rate (excluding GST)</b>
Project Manager (Samuel Matthews)	\$ 240
Assistant Project Manager (Jia Shi)	\$ 200
Team Manager (Quang Vinh Ho, Parin Tushar Upadhyay, Yuxuan Du, Pengfei Wang, Qunwei Zheng, Denis Yung Chen Chin)	\$ 180
Project Engineer	\$ 150
Graduate Engineer	\$ 120

### Intellectual properties

Please note that the drawings, methodologies, calculations and other technical content of this tender are the intellectual property of DPC Engineering and may not be modified, copied, distributed or used in any way, either in whole or in part, without the permission of DPC Engineering. In the event (and only in the event) that a contract is entered with DPC Engineering, we will license the use of our intellectual property to the Client for the purposes of this project.

### Insurance

DPC Engineering has the necessary insurances required to undertake projects and is covered for the following:

- Professional indemnity insurance
- Public Liability insurance
- WorkCover

### Payment term

DPC Engineering will submit monthly invoices with identification and justification of works have completed up to date. The payment shall be within thirty (30) days of the end of the month indicated on the invoice in accordance with the Building and Construction Industry Security Payment Act (SA) 2009.

## 6.1 Appendix A: Key Personnel CVs

### 6.1.1 Project Manager

#### **Samuel Matthews**

#### **Curriculum Vitae**

Role: Project Manager

Email: Matsd003@mymail.unisa.edu.au

Contact Number: 08 8525 5278

#### **Education/Qualifications**

2014 – Present: Bachelor of Engineering (honours) (Civil and Structural)  
UniSA

#### **Prior Experience**

Under Graduate Structures engineer at CPB Contractors  
(2015-2017)

- Undergraduate structural works, primarily bridges
- Track and forecast costs
- Program works
- Analyse design based construction issues and provide solutions for approval
- Design of temporary works for approval

Site Manager and Supervisor at Verdant Minerals

(2012-2014)

- Manage works on site during resource feasibility studies
- Assist hydrologists with data acquisition during pumping feasibility tests

#### **Previous Projects**

Ammaroo Phosphate Exploration and Feasibility Study (2014)

Noarlunga Rail Line No. 59 Extension design (2015)

Road design and traffic management (2015)

Whyalla Regional Cancer Centre Redevelopment, Reinforced Concrete and Steel Structures Design (2016)

Water Resources Systems Design for Strathalbyn, South Australia (2016)

Torrens to Torrens – Road infrastructure upgrade (2016 - 2017)

#### **Computer Skills**

Microsoft Office, AutoCAD, SPACEGASS, Strand7, CORD, Drains, HEC-RAS, CIRCLY, GALENA, Autodesk Revit, Autodesk Inventor, Solidworks, Matlab, ArcGIS, Hyperworks, Altair Inspire, Incite, Prysm.

#### **Professional Qualities**

- A strong team leader with a focus on team participation and engagement
- A broad and experience knowledge base within the engineering and construction industry
- Punctual and committed to company goals and policies
- A keen grasp of engineering concepts and design procedures





## 6.1.2 Assistant Project Manager

### Jia Shi

### Curriculum Vitae

Role: Assistant Project Manager  
Email: [shijy027@myuni.unisa.edu.au](mailto:shijy027@myuni.unisa.edu.au)  
Contact Number: 08 8525 5278



#### Education/Qualifications

2000 - 2004: Bachelor of Computer Science, University of HuaZhong Science and Technology (China)  
2010 - 2011: Certificate IV in Building and Construction (building, estimating and site management), TafeSA  
2014 – Present: Bachelor of Engineering (honours) (Civil and Structural) UniSA

#### Prior Experience

Cost Planner at Kingswood Aluminium Façade

(2013 – onwards)

- Cost planning for both pre and post tender stage
- Cost review and preparation of detailed cost reports
- Risk assessment and value engineering
- Preliminary performance design including structural, thermal and acoustic

Estimator at Kingswood Aluminium Façade

(2011 – 2013)

- Read & interpret construction drawings & specifications and tender preparation of domestic and medium size commercial building
- Communicate with contractors/suppliers for detailed costing

#### Previous Projects

- Adelaide oval redevelopment, Adelaide, South Australia (2012)
- IBIS hotel Greenfell Street, Adelaide, South Australia (2012)
- Flinders University Kinetica building, South Australia (2013)
- Royal Children Hospital stage 2, Melbourne, Victoria (2013)
- 50 Flinders Street office building, Adelaide, South Australia (2014)
- Bendigo Hospital, Bendigo, Victoria (2014)
- Alice Spring Supreme Court (ACS), Alice Spring, Northern Territory (2015)
- Adelaide University Medical and Nursing School (AMNS), Adelaide, South Australia (2015)
- University of South Australia Health and Innovation Building (HIB), Adelaide, South Australia (2015)

#### Computer Skills

Microsoft Office, AutoCAD, SPACEGASS, Strand7, CORD, Drains, HEC-RAS, CIRCLY, GALENA, Autodesk Revit, Autodesk Inventor, Solidworks, Matlab, ArcGIS, C++, Visual Basic, Fortran, JAVA, Bluebeam.

#### Professional Qualities

- Focus and target-driven
- Good at numbers and strong analytic skills
- Punctual and committed
- Time and stress management
- Organised and meet deadlines
- Effective communication skills

### 6.1.3 Structures Manager

#### **Quang Vinh Ho**

#### **Curriculum Vitae**

Role: Structural Manager

Email: hoyqy001@mymail.unisa.edu.au

Contact Number: 08 8525 5278

#### **Education/Qualifications**

2013 – Present: Bachelor of Engineering (honours) (Civil and Transport) UniSA

#### **Prior Experience**

Geotechnical Engineer at "Quang Thuan" construction surveying company  
(2016 - 2017)

- Produce designs for infrastructure which are safe and meet the requirements.
- Investigate subsurface conditions and materials of the construction sites.
- Determine the properties of the materials comprising of mechanical or chemical properties.
- Assess a wide range of risks produced by site condition.



#### **Previous Projects**

Noarlunga Rail Line No. 59 Extension (2015)

Road design and traffic management (2015)

Thuan Phuoc Bridge redevelopment, Danang, Vietnam (2016)

Hoang Sa Hotel, Danang, Vietnam (2016)

Whyalla Regional Cancer Centre Redevelopment, Reinforced Concrete and Steel Structures Design (2016)

Water Resources Systems Design for Strathalbyn, South Australia (2016)

#### **Computer Skills**

Microsoft Office, AutoCAD, SPACEGASS, Strand7, CORD, Drains, HEC-RAS, CIRCLY, GALENA, Autodesk Revit, Autodesk Inventor, Solidworks, Matlab, ArcGIS, Cube 6, and Sidra, SAP2000.

#### **Professional Qualities**

- Be good at mathematical, logistics and other fields related.
- Effective communication and team work skills.
- Punctual and committed.
- High ability to meet deadlines with high quality of working tasks.

## 6.1.4 Services Manager

### **Parin Tushar UPADHYAY**

### **Curriculum Vitae**

Role: Service Manager

Email: upapy002@mymail.unisa.edu.au

Contact Number: 08 8525 5278

#### **Education/Qualifications**

2014 – Present: Bachelor of Engineering (honours) (Civil and Structural) UniSA

2013-2014: Diploma of Engineering (Civil and Structural) UniSA

#### **Prior Experience**

Graduate intern at NKP Builder and Developer  
(2014-15)

- To design and analyse buildings using CAD software
- To design sewerage system for a small township
- Analyse and design a retaining wall



#### **Previous Projects**

Noarlunga Rail Line No. 59 Extension (2015)

Road design and traffic management (2015)

Whyalla Regional Cancer Centre Redevelopment, Reinforced Concrete and Steel Structures Design (2016)

Water Resources Systems Design for Strathalbyn, South Australia (2016)

#### **Computer Skills**

Have advance proficiency

#### **Professional Qualities**

- A highly Resourceful, flexible, innovative and enthusiastic person.
- Can play role of an efficient team player as well as a productive team leader.
- Good communication and networking skills, confident personality.
- Punctual, hardworking, fast learner, computer literate and can speak multiple languages.

## 6.1.5 Environmental manager

### **Yuxuan Du**

### **Curriculum Vitae**

Role: Environmental manager

Email: duyuy017@mymail.unisa.edu.au

Contact Number: 08 8525 5278

#### **Education/Qualifications**

2013 – 2014: Engineering Diploma at Eynesbury Institution

2014 – Present: Bachelor of Engineering (honours) (Civil and Structural) UniSA

#### **Prior Experience**

Drafting assistant at Henan Shengda Construction Pty Ltd  
(2015 - 2016)

- Using measuring instruments such as total stations, level
- Reviewing the AutoCAD software command and participated in the drawing of the project Department of CAD graphics
- Check engineering drawings for the construction



#### **Previous Projects**

Noarlunga Rail Line No. 59 Extension (2015)

Road design and traffic management (2015)

Whyalla Regional Cancer Centre Redevelopment, Reinforced Concrete and Steel Structures Design (2016)

Water Resources Systems Design for Strathalbyn, South Australia (2016)

Zhengzhou Tuan residential district development (2016)

#### **Computer Skills**

Microsoft Office, AutoCAD, SPACEGASS, Strand7, CORD, Drains, HEC-RAS, CIRCLY, GALENA, Autodesk Revit, Autodesk Inventor, Solidworks, Matlab, ArcGIS.

#### **Professional Qualities**

- Effective communication skills including oral, written and interpersonal
- Great business awareness and working attentiveness
- Adequate problem solving ability
- High sense of time and responsibility
- Productive and positive team member (team work)
- Planning and organising (meeting deadlines)
- Conduct safety and risk assessments
- Documentation

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## PENGFEI (WILSON) WANG

## Curriculum Vitae

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Role: Urban planning and community manager

Email: willsondreamer@gmail.com

Contact Number: 08 8525 5278

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### Education/Qualifications

2013-2014: Diploma of engineering SAIBT (South Australian Institute of Business and Technology)

2014 – Present: Bachelor of Engineering (honours) (Civil and Structural) UniSA



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### Prior Experience

Quality Assessment of Drained Water Into the Torrens River within the Adelaide City Area (2015)

- To find what kind of components are present in the drained water into the river
- To find out what would be the impacts of drained water within the Adelaide city area on water quality
- To develop the measures will take to lower these impacts

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### Previous Projects

- Water Resources Systems Design for Strathalbyn, South Australia (2015)
- Whyalla Regional Cancer Centre Redevelopment, Level 1 Wing, Reinforced Concrete, Steel Structures and Timber Design (2015)
- Noarlunga Rail Line No.59 Extension (2015)
- Quality Assessment of Drained Water Into the Torrens River within the Adelaide City Area (2015)

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### Computer Skills

Microsoft Office, AutoCAD, SPACEGASS, Strand7, CORD, Drains, HEC-RAS, CIRCLY, GALENA, Autodesk Revit, Autodesk Inventor, Solidworks, Matlab, ArcGIS.

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### Professional Qualities

- Willing to contribute effort for in the group project
- Highly Professional communication skills
- Punctuality
- Innovative problem solver who can generate workable solutions and resolve complains

## 6.1.6 Transport Manager

### Qunwei Zheng

### Curriculum Vitae

Role: Transportation Manager

Email: [zheqy012@mymial.unisa.edu.au](mailto:zheqy012@mymial.unisa.edu.au)

Contact Number: 08 8525 5278



#### **Education/Qualifications**

2014 – Present: Bachelor of Engineering (honours) (Civil and Structural) UniSA

#### **Prior Experience**

Transportation Engineer working on UniSA  
(2015)

- Using method of geometric road design to produce road alignment by using 12D under guidance of *Austrroads Guide to Geometric Design*
- Prepare a functional road hierarchy classification for metropolitan regions
- Development proposal and traffic impact assessment for a mixed-use development

Geotechnical Engineer working on UniSA (2015-2016)

- Develop geotechnical profile base on soil mechanics
- Retaining wall design and slope stability analysis

Structural Engineer working on UniSA (2016)

- Analysis loadings on a structural and load path
- Design structural elements with materials of steel, timber and reinforced concrete based on AS1170, AS4100, AS1720.1 and AS3600

Water Engineer working on UniSA (2016)

- Prepare design and documentation of stormwater drainage, sewer reticulation and potable water supply system for new developed areas

#### **Previous Projects**

Engineers without Borders Challenge (2014)

Noarlunga Rail Line No. 59 Extension (2015)

Road design and traffic management (2015)

Whyalla Regional Cancer Centre Redevelopment, Reinforced Concrete and Steel Structures Design (2016)

Water Resources Systems Design for Strathalbyn, South Australia (2016)

#### **Computer Skills**

Microsoft Office, AutoCAD, SPACEGASS, Strand7, CORD, Drains, HEC-RAS, CIRCLY, GALENA, Autodesk Revit, Autodesk Inventor, Solidworks, Matlab, ArcGIS, 12D.

#### **Professional Qualities**

- Honesty and integrity to effective leadership and optimal business relationships
- Dependable, responsible contributor committed to excellence and success
- Highly adaptable, mobile, positive and patient who is open to new ideas
- Productive worker with solid work ethic who exerts optimal effort in successfully completing tasks
- Good communications skills who can listen, write and speak effectively
- Innovative problem solver who can generate workable solutions and resolve complain

## 6.1.7 Quality Assurance and Safety Manager

### **Denis Chin Yung Chien**

### **Curriculum Vitae**

Role: Quality Assurance and Safety Manager

Email: [chidy010@myuni.unisa.edu.au](mailto:chidy010@myuni.unisa.edu.au)

Contact Number: 08 5200 8619

#### **Education/Qualifications**

2014: Diploma of Engineering, South Australian Institute of Business and Technology (SAIBT)

2014 – Present: Bachelor of Engineering (honours) (Civil and Structural) UniSA

#### **Prior Experience**

Engineering Projects at UniSA

- Able to interpret engineering drawings
- Implement stormwater design for various suburbs by using Drains program
- Analyse or develop detailed designs by using 12D and AutoCAD
- Develop geotechnical profile
- Analyse and design a retaining wall
- Analyse and calculate the loads of a structure by using SPACEGASS
- Design a dam by using Galena

#### **Previous Projects**

- Noarlunga Rail Line No.59 Extension (2015)
- Water Resources Systems Design for Strathalbyn, South Australia (2016)
- Whyalla Regional Cancer Centre Redevelopment Project  
Reinforced Concrete Design and Steel Structures Design (2016)

#### **Computer Skills**

Microsoft Office, AutoCAD, SPACEGASS, Strand7, COR3, Drains, HEC-RAS, CIRCLY, GALENA, Autodesk Revit, Solidworks, Matlab, ArcGIS

#### **Professional Qualities**

- Planning and organising (meeting deadlines)
- Effective communication (speaking, writing, listening)
- Solution focussed and results driven (problem solving)
- Deliver excellent customer service
- Documentation and keeping records
- Networking
- Productive and positive team member (team work)



## 6.2 Site Map and Extent

