



Precision Engineers

Customer Focused Solutions

# TENDER FOR O-BAHN CITY ACCESS PROJECT – STAGE 1

Client: Department of Planning, Transport and  
Infrastructure

Daniel Caddy • Alec Dawson • Thomas Gilmore • Peter Lock • Michael  
Oliver • Horia Rusu • Harris Tsimiklis • Sean Williams

TENDER FOR O-BAHN CITY ACCESS PROJECT – STAGE 1 | Client: Department of Planning, Transport and  
Infrastructure

Tender for O-Bahn City Access Project



10 March 2017

Mark Ellis  
School of Natural and Built Environments  
Room P2-48, Mawson Lakes Campus  
Mawson Lakes, SA 5095

Dear Mr. Mark Ellis,

Thank you for providing us with the opportunity to submit a formal tender for the O-Bahn City Access Project – Stage 1 Feasibility Study. We are honoured to be able to provide the following in response for the call for tenders, issued on the 10<sup>th</sup> March, 2017.

We firmly believe that our prior experience, dedication to safety and the environment will assist us in delivering a quality project, whilst also exceeding your expectations.

Please do not hesitate to contact Precision Engineers on (08) 8995 2620, with any enquires regarding this tender submission.

We look forward to hearing from you. On behalf of the Precision Engineers, we thank you for your time.

Yours sincerely,

Daniel Caddy

Project Manager  
Precision Engineers Pty Ltd.



## COMPANY DECLARATION

**Company Name:** Precision Engineers Pty Ltd.  
**A. B. N:** 67 900 857 945 09  
**Business Address:** Mawson Lakes Blvd, Mawson Lakes, SA 5095  
**Contact:** Phone: (08) 8995 2620  
Email: admin@precisionengineers.com.au

### COMPANY DECLARATION STATEMENT:

Precision Engineers Pty Ltd. Declare that all signatories have read and understood the brief set forth by the Department of Planning, Transport and Infrastructure. All information contained within this document and appendices were accurate at the time of its submission and all information within the tender remain the property of Precision Engineers. This tender is valid for 30 days after the submission and remains retractable by Precision Engineers at any time.

Precision Engineers offer a tender price of **\$533, 400 ex. GST**, in response to the call for tender for the O-Bahn City access project – Stage 1 feasibility study.

**Daniel Caddy**

**Project Manager**

**Date: 10/03/2016**

**Signed:**

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**Thomas Gilmore**

**Assistant Project Manager**

**Date: 10/03/2016**

**Signed:**

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## 1 COMPANY INFORMATION

### 1.1 MISSION STATEMENT

#### 1.1.1 Our 9 Pillars of Operation

*Precision Engineers* is solely dedicated to all facets of safety, therefore providing not only a safe design and workplace but also environmentally conscientious solutions. This is proven by generating our own code of conduct that provides a safe and environmentally sustainable template for each employee and contractor to follow.

Our approach, is delivered using 9 key pillars of operation. At *Precision Engineers*, our foundation is our people. We support each other, give back to the community and focus on the following principles in the work we undertake:

**P**eople – Our primary *focus*.

**R**espect – it's how we treat our people, the environment and our clients.

**E**nvironment – Sustainability at the forefront.

**C**ommunity – We give back, we are open and we share our ideas.

**I**nnovation – It's the *Precision* difference that sets us apart.

**S**afety First Culture – Our *Towards Zero*®, commitment.

**I**ntity – who we are, and how we operate. \_\_\_\_\_

**O**pen and Accountable – Quality, Safety and the Environment.

**N**etworking – Forming long-standing, healthy relationships.

### 1.1.2 Our Corporate Mission

*Precision Engineers*, is focused on achieving its goal, which is to become a global leader of innovative engineering solutions, both in the natural and built environments. *Precision Engineers* is aiming to achieve this mission by:

- ❖ Being renowned for developing the highest quality solutions, helping our clients make the best business decisions and ensuring the client is at the forefront of everything we do.
- ❖ Creating a positive, vibrant working environment for our employees, and looking to expand globally by the end of 2020 financial year.
- ❖ Employing a diverse workforce who encompass the '9 Pillars of Operation', promoting diversity and equal opportunity.
- ❖ Being accountable for our role in maintaining the environment, keeping our people safe and exceeding our customers' expectations.

High Quality Solutions • Partnerships • Diverse Workforce • Sustainably Accountable





## 1.2 COMPANY HISTORY

### 1.2.1 Overview

Established in 1991, Precision Engineers have been delivering *Customer Focused Solutions* © for well over two decades. During this time, the team at Precision, have managed clients on the Private, Public and National Stage, delivering projects with varying scope and magnitude.

Our beginning was somewhat humble, with our first project in the 1990's, being the successful delivery of a subdivision of 170 Allotments in the ever-growing region of Mt Barker, South Australia. Through this initial venture, Precision identified its specialisation in Infrastructure Services Management.

In the late 90's, Precision Engineers had a proven track record in the delivery and relocation of utility services. After gaining significant experience in the Civil Industry as a subdivision market leader, Precision moved towards the Civil Design and Road Infrastructure sector, when it was awarded the rights to design significant portions of the South-Eastern Freeway Project. Branching out into this field, was a major success, as Precision Engineers were awarded Australian Engineering Excellence Awards Honours for overcoming geological abnormalities during tunnel boring.

Due to Precision Engineers' Award Winning success, the company began focusing on solving major geological and environmental problems for local and national clientele, over the next decade. This included the renowned Torrens Footbridge in 2014, adjacent to the Adelaide Oval. This project not only required strict environmental consideration, but also close collaboration with Adelaide Oval Management and the South Australian Cricket Association, due to potential Interruptions.

Over 26 long and successful years, Precision Engineers is proud to have formed close, long-lasting relationships with key clients, which enable us to deliver projects effectively and efficiently. This has since become our corporate focus and together as a team, we strive to deliver, *Customer Focused Solutions* ©.



### 1.2.2 Previous Projects

Over 26 years of operation, Precision Engineers have been involved in a considerable amount of major infrastructure projects. The team has a proven track record of delivering transport solutions, structural design, and geotechnical analysis and services investigations for residential and commercial projects.

Monash Freeway Upgrade (Dec 16-March 17)

Client: VicRoads, Fulton Hogan

Precision Engineering was actively involved in the initial stages of the Monash Freeway Duplication Project. The Team provided excavation and pavement works, as well as assisting the client in managing subcontractors, from Eastlink to Clyde Road. During the initial excavation stage, Precision Engineers, managed traffic control and traffic management contracts for its allocated section and completed safety audits on those specific contractors. Although Precision Engineers have completed its works for this project successfully, the upgrade in its entirety, will be due for completion in Mid-2018.



Figure 1: Monash Freeway Duplication

Public Transport Study (Sep 01 – Mar 11)

Client: DPTI

Precision Engineers has in house expertise and understanding when it comes to transport and infrastructure networks around Australia. This gives our team at Precision Engineers the market edge when it comes to infrastructure projects in and around busy Australian CBDs. We understand the intricacies of the transport networks and we therefore cut no corners in the safety and efficiency of operations in the communities we serve. Our experience stems from the in-depth studies our company completed for the South Australian government, which led to the development of a 'Precision Plan™' for Australia's largest motorways, railways and ports.

Surf Central Life Saving (completion in November 2015)

Client: Surf Central Life Saving Club

Precision Engineers played a major role in the preliminary design stages of the Surf Central Life Saving Club, located at Henley Beach, South Australia. Experienced personnel within the structural department of the company, undertook extensive analysis in order to provide insightful and sustainable solutions which reflected a project that was, structurally sound. The team's proficiency in the use of the building software Revit, effectively enabled the design of the Surf Central Life Saving Club to gain a visual representation of the proposed design, and also for the purpose of determining dead and live loads in conjunction with wind pressures acting on the building. An exciting and innovative solution to a project which reflects the standard of work and commitment that Precision Engineers prides itself on.



Figure 2: Henley Beach Surf Central Life Saving Club Project

Road Assessments (December 16)

Client: Whyalla City Council

Precision Engineers have also in recent years, provided condition assessments of road infrastructure for a number of regional councils in South Australia. These condition assessments involve visually inspecting road assets using software to determine their condition. These assessments provide councils with the means to plan the reconditioning or replacement of road infrastructure well in advance, while also aiding in budgeting more effectively and efficiently for projects throughout the financial year.

Stormwater Projects Port Pirie (Feb 2017)

Client: Port Pirie City Council

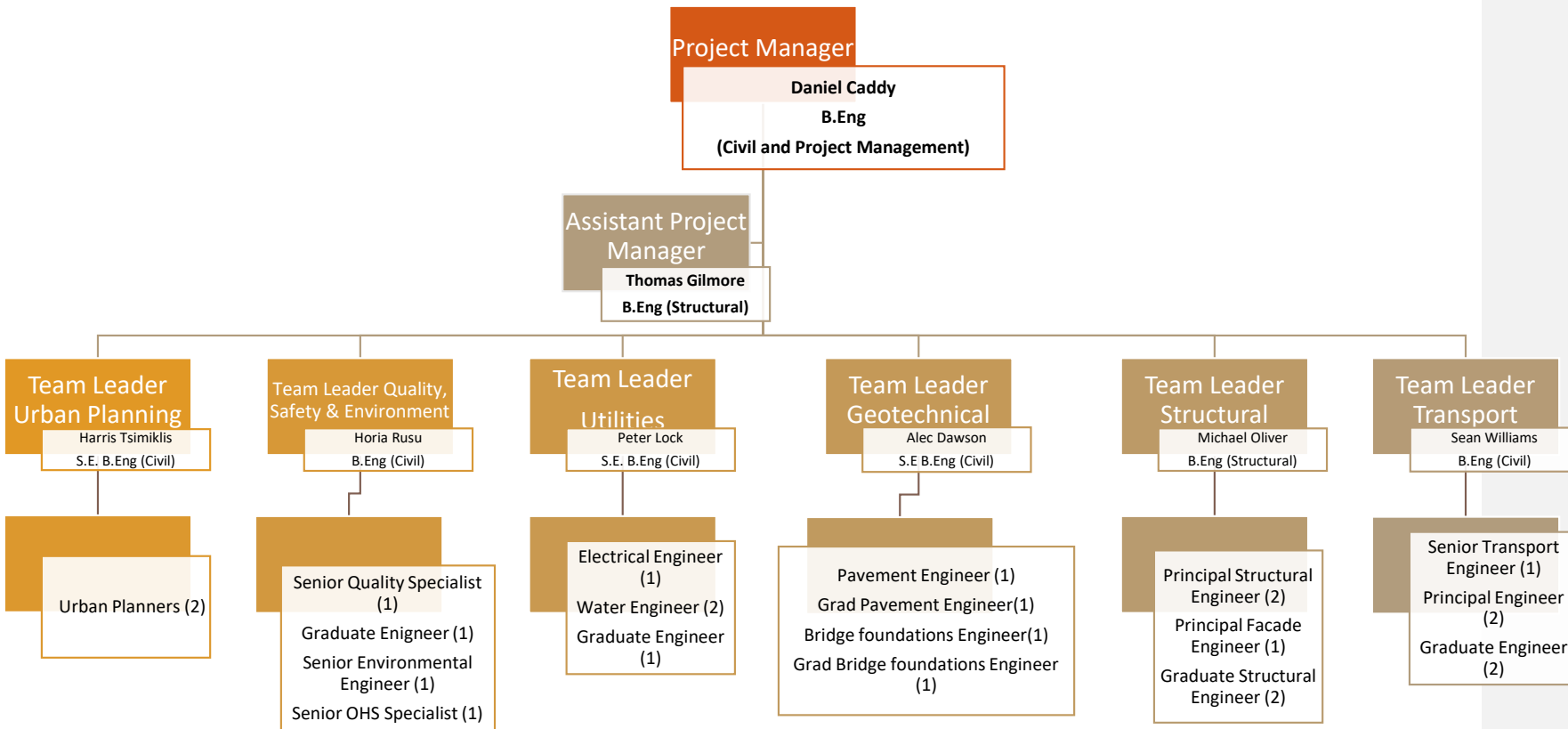
Precision Engineering has been involved in winning such projects as a stormwater upgrade in the city of Port Pirie. This project required designing a new underline stormwater extension of an area of Port Pirie which has a typically flat topography, with the area previously being identified as an area that was prone to flooding. The works involved in this project required traffic management scheme, where this provided essential traffic restrictions while excavation and the installation of a 300 mm CRC pipe line was installed. These restrictions also continued, while the road surface was being reinstated. Precision Engineering worked closely with the local council, contractors and community within the area to ensure an effective and considerate result was achieved.



Figure 3: Port Pirie Stormwater Upgrade

### 1.3 ORGANISATIONAL STRUCTURE

Precision Engineers Pty Ltd.



## 1.4 PROFILES

### 1.4.1 DANIEL CADDY

Project Manager

#### CONTACT INFORMATION

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Phone: (08) 8995 2621

Email: [dancy005@mymail.unisa.edu.au](mailto:dancy005@mymail.unisa.edu.au)

With over 10 years' experience, Daniel boasts an intricate portfolio, which includes the delivery of some of South Australia's largest mining and infrastructure projects. With many years of team work experience as both leader and member, he has been assisting clients in delivering their project goals since 2005.



#### EDUCATION

2013 – Present	Bachelor of Engineering (Civil) (Honours)
2011-2012	Certificate III in Surface Extraction
2001-2005	Cornerstone College (Completion of year 8 – 12)

#### EXPERIENCE

McConnell Dowell – Undergraduate Engineer

Exact Mining – Shot Firer (Kanmantoo & Carne Hill mines)

Lucas Earthmovers – All-round operator & Shot firer (Jacinth Ambrosia alliance & White Dam mines)

Excavation Solutions – Plant operator (Mindari Zircon mine)

Bardrill – Plant operator (Moomba)

John Nitscke Drilling – Off sider (Olympic Dam ODX)

Hille Earthmovers – Plant operator (Roxby Downs)

#### TECHNICAL SKILLS

- Certificate III in Surface Extraction
- South Australian Shot-firers Licence
- Dogman's Ticket
- White Card
- (MC) Multi-Combination Truck Driver's Licence
- Dozer Ticket
- Loader Ticket
- Excavator Ticket
- Grader Ticket
- Compactor Ticket
- Dump truck Ticket

#### PROFESSIONAL QUALITIES

- Extensive site experience
- OHS & Environmentally considerate
- Experienced team leader
- Experienced team member

#### 1.4.2 THOMAS GILMORE

Assistant Project Manager

##### CONTACT INFORMATION

Address: Mawson Lakes Blvd, Mawson Lakes, SA 5095

Phone: (08) 8995 2623

Email: [gilta004@mymail.unisa.edu.au](mailto:gilta004@mymail.unisa.edu.au)

‘For the past 6 years, Thomas has built his career around the structural engineering sector in South Australia. His focus on exceeding clients expectations and extensive history with team management makes him a perfect all-rounder for large scale projects’



##### EDUCATION

2013 – Present	Bachelor of Engineering (Civil & Structural) (Honours)
2011-2012	Associate Degree of Engineering
2009-2011	Diploma of Outdoor Recreation and Tourism
2001-2006	Scotch College (South Australian Certificate of Education)

##### EXPERIENCE

2016-2017	University of Amberg-Weiden, Germany – Industrial Engineer
2015 - Present	Parmalat Foods Pty Ltd – Plant Operator & Forklift Driver
2011 – 2015	The Earl of Aberdeen - Chef

##### TECHNICAL SKILLS

- License to perform high risk work (forklift)
- First Aid
- Chemical Handling (ECOLAB)
- White Card (OHWS)
- Proficient in: SPACEGASS, Microsoft Office, CHORDS
- Design Experience: Retaining walls, reinforced concrete design, steel & timber structures, road design, and water resource systems design.

##### PROFESSIONAL QUALITIES

- Fast Learner
- Valuable Team Member
- Extensive Experience in Team Leadership
- On-site Experience
- Highly Adaptable to New Environments

### 1.4.3 ALEC DAWSON

Team Leader: Geotechnical

#### CONTACT INFORMATION

Address: Mawson Lakes Blvd, Mawson Lakes, SA 5095

Phone: (08) 8995 2622

Email: [dawah001@mymail.unisa.edu.au](mailto:dawah001@mymail.unisa.edu.au)

Alec has extensive experience in the geological and mining industries as a previous Geotechnical Technician and Geotechnical Engineering Professional.

With a strong passion for the industry and considerable experience in pavement and sheet pile design, Alec is well prepared to take the lead in any project, large or small.



#### EDUCATION

2013 – Present	Bachelor of Engineering (Civil) (Honours)
2011-2012	Certificate III Business (Management)
1999-2012	Tyndale Christian (South Australian Certificate of Education)

#### EXPERIENCE

2016	VicRoads – Undergraduate Engineer (Project Delivery)
2015	Lab SA – Geotechnical Technician (Pavement and Aggregate Materials)
2012	Royal Australian Airforce Internship (Avionics Engineering)

#### TECHNICAL SKILLS

- White Card (OHS)
- Traffic Management and Traffic Control Certificate
- Proficient with the following software: GeoStudio 12, Galena, CIRCLY, CORD.
- Specialties: Sheet Pile Design, Footing Design, Pavement Design and Analysis.

#### PROFESSIONAL QUALITIES

- Leadership Experience
- Excellent Time Management
- Defence Engineering Experience
- Construction Site Experience
- Safety First Culture

#### 1.4.4 PETER LOCK

Team Leader: Utilities

##### CONTACT INFORMATION

Address: Mawson Lakes Blvd, Mawson Lakes, SA 5095

Phone: (08) 8995 2624

Email: locpk001@mymail.unisa.edu.au



The experience Peter has shared and gained throughout his years in the industry has developed his ability to conduct himself in a professional and effective manner. This has been enhanced by his leadership and community organisation involvements. These involvements have directly helped him develop a strong sense of versatility and determination.

##### EDUCATION

2013 – Present Bachelor of Honours (Civil)

1999-2012 Booleroo Centre District School (completion of SACE)

##### EXPERIENCE

Civil Engineering Work/ Work Experience at Port Pirie Regional Council (2016- Present)

- Involvement with tender and design selection
- Review and application of project management policies
- Planning of new stormwater drainage
- Implementing project management strategies
- Engagement with subcontractors and clients
- Vast experience with liaising throughout different fields
- Engaged with multiple consultants from other engineering firms in order to complete designs
- Experienced with communicating and locating utilities

##### TECHNICAL SKILLS

- White Card (OHWS)
- Proficient within such programs as Microsoft Suite, Exponare, MapInfo, Drains and ArcGis
- Working knowledge of SPACE GASS, HEC-RAS, AUTOCAD and Micro-Station
- HR Licence
- Land Surveying tickets

##### PROFESSIONAL QUALITIES

- Professional level of communication
- Experience in project management
- Innovative
- Fast learner
- Efficient and excellent time management skills



#### 1.4.5 MICHAEL OLIVER

Team Leader: Structural

##### CONTACT INFORMATION

Address: Mawson Lakes Blvd, Mawson Lakes, SA 5095

Phone: (08) 8995 2625

Email: olimd001@mymail.unisa.edu.au



“For the last decade, Michael has led projects throughout Australia. His intricate work specialised in the Structural discipline has been show cased in projects such as the Whyalla Regional Cancer Centre. This extensive experience has helped develop dynamic skills to suit any client’s needs.”

##### EDUCATION

2013 – Present Bachelor of Engineering (Civil & Transport) (Honours)

2009 – 2013 Craigmores High School (Completion of year 8 – 12)  
(South Australian Certificate of Education)

##### EXPERIENCE

2016 Water Resources Systems Design for Strathalbyn, Adelaide  
Reinforced Concrete – Whyalla Regional Cancer Centre Redevelopment

2015 Structural Analysis of Surf Central Life Saving Club, West Beach, Adelaide

2014 Engineers without Borders Challenge (Watermills for Gorkha District)

2011 UniSA (University of South Australia) Electrical Engineering Intern

##### TECHNICAL SKILLS

- White Card
- Workplace Health and Safety (WHS) Modules
- Proficient in: Microsoft Office, Solidworks, AutoCAD, SPACEGASS, CIRCLY, CORD, Galena, 12D
- Experience in: Revit, Matlab, ArcGIS

##### PROFESSIONAL QUALITIES

- Communication
- Organisation
- Teamwork
- Planning
- Report Writing
- Time Management
- Problem Solving

#### 1.4.6 HORIA RUSU

Team Leader: Quality, Safety and Environment (QSE)

##### CONTACT INFORMATION

Address: Mawson Lakes Blvd, Mawson Lakes, SA 5095

Phone: (08) 8995 2626

Email: rushm002@mymail.unisa.edu.au



“Horia has experience in strategic management and development and is determined to provide the optimal solution to suit each client. Proficiencies in human resource applications and research methods.”

##### EDUCATION

2013 – 2017	Bachelor of Engineering (Civil) (Honours)
2010 – 2011	Certificate I in Engineering
2010 – 2011	Certificate II in Multimedia
2007 – 2011	Henley High School (Completion of year 8 – 12)

##### EXPERIENCE

2016 – 2017	Strobel Quarzsand –Student Researcher
2015 – 2016	DPTI (Department of Planning, Transport and Infrastructure) GOV. SA – (Engineering) Strategic Management Intern
2014 – 2015	URB Mining and Logistics Consulting – Capability Study Research and Design

##### TECHNICAL SKILLS

- White Card (OHWS)
- Workplace Health and Safety (WHS) modules
- Red Cross ‘Apply First Aid’
- Proficient in: Microsoft Office, SPACEGASS, AutoCad, GIS Software, Routine Manual Metal Arc Welding (MIG)

##### PROFESSIONAL QUALITIES

- Experience in strategic development
- Experience in design and manufacturing
- Experience in safety conscious environments
- Ability in leadership roles
- Positive team member

#### 1.4.7 HARRIS TSIMIKLIS

Team Leader: Urban Planning

##### CONTACT INFORMATION

Address: Mawson Lakes Blvd, Mawson Lakes, SA 5095

Phone: (08) 8995 2627

Email: tsihy002@mymail.unisa.edu.au



“With 6 years of practical experience, as a residential builder, Harris is a new addition to the leadership team, who comes equipped with fresh ideas and a varied background.”

##### EDUCATION

2013 – Present Bachelor of Engineering (Civil) (Honours)

##### EXPERIENCE

2011 Work experience with Candetti Constructions (with the site project and safety managers)

2014 Engineers without Borders Challenge - housing in Nepal

2017 Engineers without Borders Challenge – drinking water in Cambodia

##### TECHNICAL SKILLS

- White Card
- Work Health and Safety Modules (WHS)
- Experienced with using software such as SpaceGass, ArcGIS, AutoCAD, Solidworks, Revit

##### PROFESSIONAL QUALITIES

- Communication
- Reliable
- Punctual
- Problem solving
- Time management
- Teamwork
- Bilingual (can speak Greek)

#### 1.4.8 SEAN WILLIAMS

Team Leader: Transport

##### CONTACT INFORMATION

Address: Mawson Lakes Blvd, Mawson Lakes, SA 5095

Phone: (08) 8995 2628

Email: [wilsd009@mymail.unisa.edu.au](mailto:wilsd009@mymail.unisa.edu.au)

Sean has over five years' experience working within the civil construction industry, with additional experience in design and condition assessment of road infrastructure with Tonkin Consulting. This wealth of experience positions him perfectly to lead to the transport division throughout the feasibility study.



##### EDUCATION

2014 – Present Bachelor of Engineering Honours (Civil)

2013 – 2013 Bachelor of General Studies

##### EXPERIENCE

2016 -2017 Tonkin Consulting undergraduate work experience

2010 – 2016 Venarchie Contracting (Civil Construction Company)

##### TECHNICAL SKILLS

- White Card
- Proficient in the use of SpaceGass, Strand7 and CIRCLY
- Experience in the design of roads and road surfaces, structures (concrete, steel and timber), water resources and traffic management.

##### PROFESSIONAL QUALITIES

- Excellent time management skills
- Action orientated
- Capacity to work unsupervised and as part of diverse teams
- Ability to take on leadership roles

## 1.5 PROJECT FEASIBILITY ASSUMPTIONS

### 1.5.1 Assumptions

- We will be assuming all reports are correct when handed down to our geotechnical team. This data is to be provided by the client.
- It will also be assumed that the traffic data supplied in regards to axel size and volume is correct.
- It is assumed that Precision Engineers are able to build upon the heritage listed bridge, without structurally altering its design or components.

## 2.0 POTENTIAL DESIGN SOLUTIONS

Precision Engineers have dedicated its diverse and experienced teams to investigating the site of the Stage 1, O-Bahn City Access Project, and identifying possible design solutions. Through this process, four potential options that provide a comprehensive set of solutions to the O-Bahn upgrade have been identified. These innovative solutions have been tailored to increase the capacity of lanes on both bridges, consequently increasing traffic flow while maintaining public safety in design. Substantial considerations have also been put forth to widen and remodel Hackney road from Bundeys road to Plane Tree drive (Northern Entrance). Below is an overview of the proposed solution, with visual representation of each solution provided in the appendix.

### 2.1 Redevelopment of Bridges

The suggested solution for this option is to redevelop the current bridge structure. It has been identified that there are currently two footpaths on the bridges (Outer most eastern and western sides), with the additional 3 m centre island (hollow fall through). By removing the footpaths and filling in the 3m centre area this area can be re-purpose as the priority bus lanes. Widening of the western bridge may be required to accommodate the bicycle lanes.

#### Key Benefits:

- Easy access
- reduced urban development (less park land use)
- Efficient travel times
- Reduced pedestrian disruption

### 2.2 Pedestrian Rerouting

This solution is based on removing the outside footpaths and creating a pedestrian bridge over the middle of existing bridges. This will direct pedestrian traffic from both sides of the road to walk over the centre section of the road, which will be elevated for safety. As a part of this option the western bridge will require widening for the out bound priority bus lane and any bicycle lanes.

#### Key Benefits:

- Easy access
- Reduced urban development footprint
- Optimised use of current spaces
- Reduced time delays

### 2.3 Dedicated Pedestrian Bridge

The implementation of a dedicated pedestrian bridge that crosses the Torrens on the western side of the existing bridges. This solution requires the remove all footpaths from the existing bridges, this will allow for a dedicated bus lane to be formed on the Western bridge. The western bridge will require widening to accommodate priority bus and cyclist lanes.

#### Key Benefits:

- Higher pedestrian safety
- Faster Travel times

### 2.4 Dedicated Bus Overpass

To eliminate traffic interaction between the busses and public we propose to build an over pass from the original O-Bahn track that will return to grade on Hackney road. The over pass will be elevated above all traffic and over both bridges, then returning to grade on Hackney road. To make room for the south bound overpass a re-alignment of Park road north of Bundeys road is required. This will eliminate the need to structurally alter the existing bridges, but will require pedestrian and cyclist upgrades.

#### Key Benefits:

- Separation of buses from existing traffic lanes, therefore reducing side swiping.
- Faster travel times

### 2.5 Hackney Road Extension

Along Hackney road, we propose to have 2 bus lanes each side of the median strip, with the additional 2 lanes of public traffic north bound and south bound. This development can be achieved through the widening of the road between Plane Tree drive (northern entrance) and Bundeys road to cater for the bus and cyclist lanes. Consequently, this will require the reduction of centre islands, external kerbing, footpaths and off street parking. Consideration has also been given to the relocation of the current vegetation that is situated in the design area. Relocation of the vegetation affords the opportunity to be environmentally considerate and brighten the Adelaide Landscape. This design extension is applicable to the relevant potential ideas proposed/outlined above by the team at Precision Engineers.

### 3.0 PROJECT SCHEDULE BREAKDOWN

Below is a breakdown of the tasks to be undertaken to complete the feasibility study. For a project timeline refer to the appendix.

#### 3.1 Geotechnical

##### 3.1.1 Capability Statement

When it comes to Geotechnical Solutions, Precision Engineers have a vast range of experience. With over 8 years of industrial experience in the Public Sector, Mr. Dawson, joined the team in 2005, after the successful delivery of the South-Eastern Freeway Project. Since then, Mr. Dawson has served as the centre piece of the Geotechnical division at Precision Engineers. Mr. Dawson's **focus** is exceeding client's expectations, by incorporating his knowledge of Business Best Practice, Environmental Sustainability and Quality Processes in his delivery and management of road infrastructure projects.

##### 3.1.2 The Team

At Precision Engineers, we maintain the ideology that to achieve a result, a team effort is always required. Mr. Dawson leads a team of four engineers, who have a proven track record and are embodied by *Precision Engineers: 9 pillars of operation*.

Principal Pavement Engineer (5-10 years' experience)

Graduate Geotechnical Engineer – Pavement (1-2 years' experience)

Principal Foundations Engineer (5-10 years' experience)

Graduate Geotechnical Engineer - Footings/Foundations (1-2 years' experience)

##### 3.1.3 Major Deliverables

This team is very close knitted and will work throughout the project assessing underling pavement conditions, footing conditions for any potential structure, increasing footing strengths, reviewing and analysing past and present geotechnical reports of project within the area. This will allow for our team to spot any issues before they arise, ensuring the lowest cost is achieved. To ensure project success, Mr. Dawson and his team have identified the following Deliverables as being the 'key' to a successful project:

- Field Reconnaissance Survey Report
- Geotechnical Investigation Report which includes:
  - Pavement and Road Widening Options
  - Bridge Foundations Options



- Geotechnical report supplied by DPTI

### 3.1.4 Major Tasks

#### 3.1.4.1 Field Reconnaissance Survey

In order to better understand and grasp the project scope, Precision Engineers performs a detailed Field Reconnaissance Survey, with each preliminary Geotechnical Investigation. In doing so, the team can better understand the environment in which the potential bridge extension will be located and conceptualise the interaction between the soil and structure. The primary objectives of this survey include:

- Gaining an understanding of the surface condition.
- Note any exposed geological features that would cause limitations.
- Investigate legality aspects of the site, and the ability for machinery and sub-contractors to complete work in the proposed site.

The deliverance of this task will ensure compliance with the following pillars of Operation:

- **Environment** – Sustainability at the forefront.
- **Identity** – It's who we are and how we operate.

#### 3.1.4.2 Geotechnical Review

To gain a greater understanding of the foundations in which Precision Engineers will base their feasibility study on, a comprehensive set of geotechnical reports that must be provided by DPTI. This would ideally include: IPS evaluation, Standard and Modified Compaction, Modified Dry Density evaluation, California Bearing Ratio testing, UCS Compressive Strength Testing and a bore log acidity interaction testing.

In providing this information, Precision Engineers will determine the associated constraints, when coming to design both the Pavement and the Bridge components.

The deliverance of this task will ensure compliance with the following pillars of Operation:

- **Open and Accountable:** Compliance with relevant standards.
- **Identity** – It's who we are and how we operate.

#### 3.1.4.3 Geotechnical Investigation Report

The Geotechnical Investigation Report, is a widely-used tool in Precision Engineers projects, which incorporates all the data collected from the preliminary Geotechnical Investigation.

A report will be drafted after the initial investigation and site visit, with a final submission to be completed with Team Leader's approval.

The report will detail the initial findings and help the other Precision Engineers' Teams to understand their design limitations when forming ideas and potential options for the client.

The deliverance of this task will ensure compliance with the following pillars of Operation:

- **Community:** we share our ideas, internally and externally.
- **Innovation:** we go above and beyond for our clients, we exceed expectations.

### 3.1.5 Interdependencies

The geotechnical aspects will be dependent on the completion of the project preliminaries. Commencement will be initialised, once the following items are completed:

- Initial Site Inspection
- Stakeholder Identification and Engagement
- Initial Team Meetings (Project Team Leaders)

The geotechnical investigations report, is a major deliverable of this project, as the additional teams will rely on the information collated, to form ideas and make decisions. It is therefore one of Precision Engineers priorities, to have the tasks listed above completed, on time and of the highest quality.

### 3.1.6 Minor Team Deliverables

In order for Precision Engineers, Geotechnical Team to remain on-track, the following methodology will be adopted.

- Team Meetings will be set at weekly intervals.
- The team leader will schedule work, and be the main point of contact for the Geotechnical Stakeholders.
- The Senior Team Leader will undertake the Field Reconnaissance Survey with the assistance of the Principal Foundations Engineer.
- The Principal Foundations Engineer will compile and submit the Reconnaissance Survey Report to the Team Leader for review, approval and sign off.
- The Graduate Pavement Engineer will be directly reporting to the Principal Pavement Engineer and will assist in the development of the Geotechnical Investigation Report.
- The Graduate Foundation Engineer will report to the Principal Foundations Engineer and will assist in developing the relevant sections in the Geotechnical Investigation Report.

- The Principal Engineers will together be responsible for the submission of the Geotechnical Investigation Report. They will submit a final copy to the Team Leader for review, approval and sign off.
- Updates will be given to higher management as outlined in company's Quality Management Plan.

### 3.2 Utilities

#### 3.2.1 Capability Statement

Mr. Lock, the Utilities and Services Team Leader here at Precision Engineers, has successfully led operations in Australia and overseas. Coming from a varied background including, the electrical, gas and water services sectors, Mr. Lock comes equipped with the knowledge, passion and commitment to get your project over the line and exceed expectations in the process. As Manager of Utilities and Services, he has successfully led his dedicated team of engineering professionals in multi-million-dollar redevelopment projects. In the process, he has been at the forefront of environmental sustainability at Precision Engineers, as the active President of the 'Green Steering Committee'.

#### 3.2.2 The Team

At Precision Engineers, we maintain the ideology that to achieve a result, a team effort is always required. Mr. Lock leads a team of four engineers, who have a proven track record and are embodied by *Precision Engineers: 9 pillars of operation*.

Principal Electrical Engineer (5-10 years' experience)

Principal Water Engineer (5-10 years' experience)

Principal Water Engineer (5-10 years' experience)

Graduate Engineer (Less than 5 years' experience)

#### 3.2.3 Major Deliverables

The major objectives we believe will ensure project success are as follows:

- Determine the effected utilities and develop mitigation strategies for EACH case.
- Develop a fully operational Relocation Plan, for the effected utility assets.
- Produce drainage, kerb and channel options for presentation.

### 3.2.4 Major Tasks

#### 3.2.4.1 Site Investigation and Survey of Existing Services

As this project is potentially highly complex, it is important that all factors are taken into consideration when assessing options. The main priority is always the safety of our workers and the community, therefore a Dial-Before-You-Dig investigation will be undertaken as an initial step. In doing so, we are securing the safety of subcontractors prior to any works that will be required to be undertaken.

Additionally, it is a requirement that we first identify the services that require relocation. By undertaking a comprehensive site visit with services managers and authorising bodies, we will ensure compliance with necessary standards. The initial and subsequent site visits will be undertaken by our Principal Electrical Engineer, with invitees to attend including; Manager Assets: SA Water, Asset Maintenance Manager: SA Power Networks, Community Engagement Officer: NBN CO.

This will ensure compliance with our 9 Pillars of Operation:

- **P**eople – Our principal focus.
- **N**etworking: Forming Long Lasting relationships, with Stakeholders.
- **O**pen and Accountable: Compliance with relevant standards.

#### 3.2.4.2 Develop a Relocation Plan (Utility Services and Assets)

After the completion of the consultation with stakeholders and the initial site visit, it will be necessary for the Utilities Team to develop a comprehensive, but visually simplistic Relocation Plan. This will be submitted as a single confidential document that will clearly document the potential relocations associated with the selected designs.

The relocation plan will show the assets which will be effected by the options we detail and the potential for disruption to services that this project will cause. Rectification methods will be included to assure the client that services are managed with care.

The relocation plan will be drafted by the Principal Electrical Engineer with collaboration and consultation with Mr. Peter Lock, who will personally oversee this task and its submission. Upon completion, Mr. Lock can liaise with the necessary stakeholders, in a meeting at the Precision Engineers office.

This will ensure compliance with the following 9 Pillars of Operation:

- **C**ommunity: we share our ideas.

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- Innovation: we go above and beyond for our clients, we exceed expectations.



#### 3.2.4.3 Produce Water Resource Options

A separate site visit by the Water Engineering Section of the Utilities Team will enable Precision Engineers to better grasp the options for drainage and water resources integration. Initially, the Principal Water Engineer will conduct a site investigation to determine the current drainage design and the potential impact the project options will cause.

Our principal water engineers are renowned for their work on services projects. As part of the Precision Engineers Difference®, the office will conduct the relevant desktop study and analysis using DRAINS software to determine the necessary kerb and channel, culvert and stormwater design that will be required to ensure the readiness and presentation of each project option.

As a key part of how we operate as a business, we will investigate the opportunities for environmental sustainability and are willing to work with the client to achieve the goals of their individual businesses, in terms of sustainability and the environment. This includes investigating Silt traps, Water Sensitive Urban Design and water saving potential.

This will ensure compliance with the following pillars of Operation:

- **Respect** – it's how we treat our people, the environment and our clients.
- **Environment** – Sustainability at the forefront.
- **Community** – We give back, we are open and we share our ideas.
- **Identity** – It's who we are and how we operate.

#### 3.2.5 Interdependencies

The utilities and services within the project scope area will be directly affected by the options outlined by the Project Team. The Utilities and Services key objectives are reliant on practical completion of the deliverables from each of the other teams, prior to the start of this investigation.

Although design options can be initially developed and brainstormed, it is essential that the project team analyses the current location and state of the services to determine the project constraints. Therefore it is Precision Engineers decision that the project team will undertake the utilities site visit prior to commencing design work to ensure that there are no potential conflicts of interest. However, the relocation and staging plan will be drafted and finalised after the subsequent activities from Geotechnical, Transport, Structural, Urban Planning and QSE.

The Water Team is reliant on the pavement design, as well as the widening plan for Hackney Road. This process will be undertaken in conjunction with the Relocation and Staging Plan.



### 3.2.6 Minor Team Deliverables

In order for Precision Engineers Utilities and Services Team to remain on track, the following methodology will be adapted.

- Team Meetings will be set at weekly intervals.
- The team leader will schedule work and be the main point of contact for the Utilities Stakeholders.
- The graduate engineer will be directly reporting to the Principal Electrical Engineer and be engaged with the Relocation Plan and its management.
- The Water Engineers will report directly to the team leader and will have a separate meeting schedule. (Water Resources Specifics).
- Updates will be given to higher management as outlined in company's Quality Management Plan.

### 3.3 Transport Design Investigation

#### 3.3.1 Capability Statement

The design of the new road alignment is a critical task, that when completed will provide safer and more efficient vehicle movements along Hackney Road and over the river Torrens. As such, the team selected for the investigation of a feasible road realignment was done due to their proven track record of delivering quality projects on time, and to the client's expectations. Our team will make sure to that all aspects are looked after, ranging from access to all local streets and businesses where it is planned that all these factors are consider to have the least amount of negative impact and interruptions. The team leader will be responsible for liaising with relevant parties, managing documentations and will be supported by the senior engineer, who will be responsible for resourcing each task detailed below and overseeing the investigation of structural design options throughout the project.

#### 3.3.2 The Team

At Precision Engineers, we maintain the ideology that to achieve a result, a team effort is always required. Mr. Williams leads a team of five engineers, who have a proven track record and are embodied by *Precision Engineers: 9 pillars of operation*.

Senior Engineer – Will work closely with the team leader

Principle Engineer – (10 years' experience)

Principle Engineer – (12 years' experience)

Graduate Engineers- (Having only recently graduated with one and two years' experience).

#### 3.3.3 Major Deliverables

The key overall objectives we will achieve through this is stakeholder satisfaction, minimal delays, faster travel times and improving quality. The following tasks have been identified as crucial to the successful delivery of the project

- Traffic Impact Assessment
- Preliminary pavement design
- Preliminary road realignment design



### 3.3.4 Major Tasks

#### 3.3.4.1 Traffic Impact Assessment

Traffic Impact Assessment, which will aid in developing an understanding in regards to how the proposed design solutions will affect the transportation system. This also provides an opportunity to develop actions to mitigate any possibly negative effects that may be identified.

The delivery of this task will comply with the following pillars of operation:

- **Community** – We give back, we are open and we share our ideas.
- **Safety First Culture** – Our Towards Zero®, commitment.

#### 3.3.4.2 Preliminary Pavement Design

Preliminary pavement design will be undertaken by the principle engineers following review of the geotechnical report. The principle engineers will be responsible for undertaking this investigation, supported by the senior engineer.

The delivery of this task will comply with the following pillars of operation:

- **Environment** – Sustainability at the forefront.
- **Community** – We give back, we are open and we share our ideas.
- **Safety First Culture** – Our Towards Zero®, commitment.
- **Open and Accountable** – Quality, Safety and the Environment.

#### 3.3.4.3 Preliminary Road Realignment Investigation

Preliminary road realignment options will be undertaken by the principle engineers following review of the geotechnical report. This investigation will highlight any issues with road realignment, and also provide an opportunity to identify how much of the Western side of Hackney Road will need to be widened to accommodate the new bus lanes.

The delivery of this task will comply with the following pillars of operation:

- **Environment** – Sustainability at the forefront.
- **Community** – We give back, we are open and we share our ideas.
- **Safety First Culture** – Our Towards Zero®, commitment.
- **Identity** – who we are, and how we operate. \_\_\_\_\_

### 3.3.5 Interdependencies

There are number of tasks that the team have highlighted that will either directly affect the development of the transport design, or other team tasks.

- In order to complete pavement designs, and investigate road realignment options, the team will need access to geotechnical information.
- They will also need to work closely with the utilities team to ensure any service relocations are feasible

### 3.3.6 Minor Team Deliverables

- Team Meetings will be set at weekly intervals.
- The team leader will schedule work, and be the main point of contact for all Stakeholders.
- The gathering of traffic data, whether provided by the principle, or obtained by Precision Engineers is a critical task that will guide the development of the proposed design solutions. This task will be allocated to the graduate engineers, and be overseen by the principle engineers.
- Evaluation of the geotechnical information provided or obtained.

### 3.4 Structural Design Investigation

#### 3.4.1 Capability Statement

As highlighted in our work history, Precision Engineers have extensive experience in the construction of road infrastructure such as bridges, tunnels and road realignments. We have a dedicated structural team lead by Michael Oliver, who have the capacity to deliver innovative and complicated projects. Our consultant team has driven the standard on designing new bridges, structures and freeways where others have deemed it as implausible. Precision Engineers as a team will not back down on any issue no matter how complex it is. Our team uses the most updated software to pull apart and formulate our designs, which fulfil any Australian and New Zealand standards. The team leader will be responsible for liaising with relevant parties, managing documentations and will be supported by the senior engineer, who will be responsible for resourcing each task detailed below, and overseeing the investigation of structural design options throughout the project.

#### 3.4.2 The Team

At Precision Engineering, we maintain the ideology that to achieve a result, a team effort is always required. Mr. Oliver leads a team of five engineers, who have a proven track record and are embodied by *Precision Engineers: 9 pillars of operation*.

Principle Engineer – (15 years' experience)

Principle Engineer – (8 years' experience)

Façade Engineer - (4 years' experience)

Graduate Engineer – (Having only recently graduated with one and two years' experience).

#### 3.4.3 Major Deliverables

The following tasks have been identified as crucial to the successful delivery of the project. This design will be a safe, appealing and viable option for any prospective commuter. It will also be ensured that the design improves better accessibility and opinions around using public transport.

- Investigate preliminary bridge design options
- Investigate preliminary bridge footing options
- Provide preliminary bridge design

### 3.4.4 Major Tasks

#### 3.4.4.1 Investigate Preliminary Bridge Options

This is one of the crucial investigations, and as such an initial site visit will be required in order to gain a better understanding of how the proposed solutions may be implemented.

The delivery of this task will comply with the following pillars of operation:

- **People** – Our First Priority.
- **Environment** – Sustainability at the forefront.
- **Community** – We give back, we are open and we share our ideas.
- **Innovation** – It's the Precision difference that sets us apart.
- **Safety First Culture** – Our Towards Zero®, commitment.

#### 3.4.4.2 Investigate Preliminary Bridge Footing Options

Following the investigation of feasible bridge options, the team will investigate footing options. This is a crucial undertaking by the team, as there is restricted space available to place footings either side of the current bridge.

The delivery of this task will comply with the following pillars of operation:

- **Environment** – Sustainability at the forefront.
- **Safety First Culture** – Our Towards Zero®, commitment.

#### 3.4.4.3 Provide Preliminary Bridge Design Options

Following investigation of bridge design options and subsequent footing options the team will compile a report with their findings. Mr Oliver will be responsible for reviewing the findings, ensuring that the feasible options put forward have been investigated in depth, and compiled in an acceptable manner.

The delivery of this task will comply with the following pillars of operation:

- **People** – Our First Priority.
- **Respect** – it's how we treat our people, the environment and our clients.
- **Environment** – Sustainability at the forefront.
- **Community** – We give back, we are open and we share our ideas.
- **Innovation** – It's the Precision difference that sets us apart.
- **Safety First Culture** – Our Towards Zero®, commitment.
- **Identity** – who we are, and how we operate. \_\_\_\_\_

- **Open and Accountable** – Quality, Safety and the Environment.

#### 3.4.5 Interdependencies

There are number of tasks that the team have highlighted that will either directly affect the development of the transport design, or other team tasks.

- In order to complete pavement designs, and investigate road realignment options, the team will need access to geotechnical information.
- They will also need to work closely with the utilities team to ensure any service relocations are feasible

#### 3.4.6 Minor Team Deliverables

- Team Meetings will be set at weekly intervals.
- The team leader will schedule work, and be the main point of contact for all Stakeholders.
- Collecting and reviewing all available data that may assist in developing a solution
- Dilapidation Report
- Determine if there is capacity for existing bridges to take additional loads
- Determine how materials for proposed options will be obtained and moved to job site
- Preparation of preliminary design options
- Determine initial cost for each design solution
- Review heritage report to determine the effects that proposed solutions will have

### 3.5 Urban Planning

#### 3.5.1 Capability Statement

With the location of the proposed site being located within close proximity to heritage listed structures, and the botanical park lands. Considerable attention will be given to urban planning and how the proposed solutions will impact the environment, heritage structures and the local community. By undertaking this detailed assessment, Precision Engineers will ensure that a sustainable and environmentally friendly design solution will be put forward that not only meets the clients expectations, but just as importantly the communities. The team leader for this will be Harris Tsimiklis, who will be responsible for resourcing each task, overseeing assessments, documentation and liaising with the relevant parties.

#### 3.5.2 The Team

At Precision Engineering, we maintain the ideology that to achieve a result, a team effort is always required. Mr. Tsimiklis leads a team of two engineers, who have a proven track record and are embodied by *Precision Engineers: 9 pillars of operation*.

Urban Planner – (3 years' experience)

Urban Planner - (5 years' experience)

#### 3.5.3 Major Deliverables

The infrastructure planning will be ensured to coincide with the local government policies and requests of the vast ownerships within the area, where members of the team will be dedicated to achieving this.

Special aestheticizes will be put in place to preserve and minimize any effects to gardens or river banks, with planning allowance to any unforeseen prospective projects. The scope of our urban planning team will be ensuring that our strategic plan is followed and tailored to the best of the possible outcomes.

The major team deliverables are detailed below:

- Community impact assessment
- Heritage impact assessment
- Investigation and rectification methods
- Compile strategic urban development master plan

### 3.5.4 Major Tasks

#### 3.5.3.1 Community & Heritage Impact Assessment

The community impact assessment is a crucial undertaking that will enable the team to identify any issues that may directly and indirectly affect the community, and any heritage structures within and surrounding the site. The team will work closely with the other divisions, ensuring that any proposed design solutions minimise negative impacts on the community and identify any opportunities. The team will also work closely with relevant stakeholders, identifying and documenting their concerns.

The delivery of this task will comply with the following pillars of operation:

- **People** – Our First Priority.
- **Respect** – it's how we treat our people, the environment and our clients.
- **Community** – We give back, we are open and we share our ideas.
- **Open and Accountable** – Quality, Safety and the Environment.
- **Networking** – Forming long-standing, healthy relationships.

#### 3.5.3.3 Investigate Rectification Methods

Following investigation of community and heritage issues, the team will liaise with other teams to determine what impacts any proposed design solutions may have. This will provide the opportunity to investigate any mitigation strategies that may minimise impacts.

The delivery of this task will comply with the following pillars of operation:

- **People** – Our primary focus.
- **Respect** – it's how we treat our people, the environment and our clients.
- **Environment** – Sustainability at the forefront.
- **Community** – We give back, we are open and we share our ideas.
- **Innovation** – It's the Precision difference that sets us apart.
- **Safety First Culture** – Our Towards Zero®, commitment.

#### 3.5.3.4 Compile Strategic Urban Development Master Plan

Compiling of the strategic urban development master plan is the final stage of the urban assessment. The team leader will be responsible for ensuring that the team has covered all aspects of urban design that may directly or indirectly effect any proposed design solutions.

The delivery of this task will comply with the following pillars of operation:

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- **People** – Our primary focus.
- **Respect** – it's how we treat our people, the environment and our clients.
- **Community** – We give back, we are open and we share our ideas.

### 3.5.5 Interdependencies

- The investigation detailed in the minor team deliverables will be crucial as a number of teams will be awaiting the assessment as the findings may affect the feasibility of some design options.

### 3.5.6 Minor Team Deliverables

- Team Meetings will be set at weekly intervals.
- The team leader will schedule work, and be the main point of contact for all stakeholders.
- Investigate community impact
- Investigate heritage impact
- Liaise with the team assessing the environmental impact



### 3.6 Quality, Safety and Environment

#### 3.6.1 Capability Statement

Precision Engineering has only the highest standards regarding the quality of the design and construction work related to our projects. We work closely with our clients and community to deliver this quality work while not sacrificing the safety of our personnel. The environmental factors which surround our proposals are respected and close attention is paid to the impact of sustainability which we leave behind for the future generations.

Horia Rusu has over 10 years of experience and has been a part of all major projects Precision Engineers has been involved with. Mr Rusu will fulfil a vital role of managing the quality, safety and environmental aspects of the project, one of which he excels at. Mr Rusu's work ethic is astounding, as well as his ability to solve any challenges that may arise during the completion of the project.

#### 3.6.2 The Team

Horia Rusu leads a team of dedicated engineers, who are capable of overseeing this task, liaising with relative parties and resourcing. In this team Horia Rusu will oversee the required deliverables of our senior quality specialist, senior environmental engineer and senior DHS specialist. We therefore have full confidence in the abilities of our specialists and engineers in this sector.

#### 3.6.3 Major Deliverables

The major team deliverables are detailed below:

- Quality Assurance System
- Environmental Impact Assessment

#### 3.6.4 Major Tasks

##### 3.6.4.1 Environmental Impact Assessment

In collaboration with the urban planning team we will be drafting and developing an environmental impact assessment. This will detail the key environmental factors including any heritage sites and sustainability of the project in the long term.

##### 3.6.4.2 Quality Assurance System

The quality assurance system will be drafted and developed to ensure a detailed summary of how the quality of the project will be maintained through various processes of project management. Quality criteria will be specified, hence the appropriate teams will be held responsible for meeting their specified criteria.



### 3.6.5 Minor Team Deliverables

For Precision Engineers Quality, Safety and Environmental Team to remain on-track, the following methodology will be adopted.

- Team Meetings will be set at weekly intervals.
- The team leader will schedule work and be the main point of contact.
- The team leader will be responsible for the timely completion of each task according to the time schedule

## 4.0 PROPOSED PROJECT METHODOLOGY

### 4.1 Proposed Approach

#### 4.1.1 The 'Precision Difference' Approach

Precision Engineers has a vast wealth of experience and knowledge in the engineering field, which directly correlates to the O-Bahn City Access Project. In the preliminary phases of the feasibility study, the team leaders accompanied by senior engineers will undertake an analysis into the project. This analysis will involve the determination of various methods of approach, by actively discovering the fundamental goals and objectives that are related to the project itself.

The determination of the appropriate solution lies deeply in conjunction with the varying limitations and restraints which surround the project. This can include the location and project area itself, aligned with the client's interests and requests. Taking this into consideration, the feasibility of each option which has been deemed appropriate, will undergo further analysis by the varying disciplines. This is to enable the various team leaders and senior engineers to dissect whether the options are compatible with the goals and objectives determined for the project.

#### 4.1.2 Determination of Feasibility

Thorough investigation and analysis will commence into the feasibility of each option, to determine an understanding of how their outcome coincides with the projects ultimate goals and objectives. As the project is multi-disciplined, it is crucial that the feasibility of each appropriate option takes comprehensive considerations into account from the following disciplines:

- Urban Planning
- Environmental Considerations and Implications
- Utilities (Electrical, Water Systems and Resources)
- Transport Systems
- Structural Design
- Geotechnical Design

Additionally, in depth costing estimates and appraisals offer considerable insight as to the most economic and cost effective option. In conjunction with planning and time scheduling, Precision Engineers strive to deliver the best option which is most suitable to the objectives of the project.

## 4.2 CONSIDERATIONS ON THE ENVIRONMENT

Precision Engineers deliver exceptional solutions for a wide variety of engineering projects and products, with a firm belief and engagement in leading innovation and producing strategies that are environmentally friendly.

A strong emphasis and philosophy that is built within the core foundations of Precision Engineers is a commitment to actively take into consideration the environment when undertaking projects. It is key to also analyse and assess the possible environmental issues that may arise throughout a project, as extensive experience and history shows that it can be a common occurrence.

In order to ensure that all environmental aspects that are related to the O-Bahn City Access project are thought of and covered, an Environmental Management Plan (EMP) will be established, and will be in accordance with relevant Australian Standards. The EMP assures that extensive investigations are undertaken or take place in regards to any relevant environmental issues that may arise through and after the construction phase of the project.

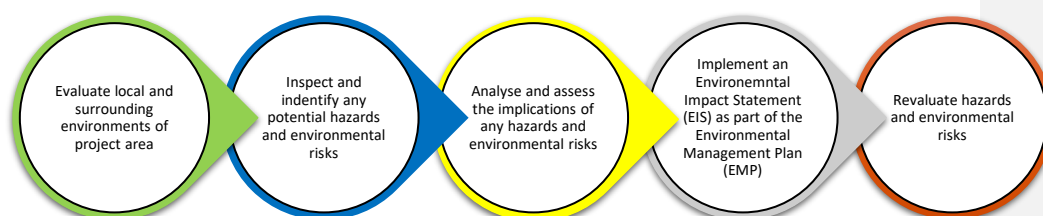
A key implementation that is effectively part of the EMP is the Environmental Impact Statement (EIS). The EIS is an important document produced on the occasion where a potential environmental issue is noticed and raised. It is then part of the EMP to assess the issue, and provide a procedure in which it can be managed and contained.

### 4.2.1 Objectives

- Establish an EMP for the purposes of the feasibility study phase that is in accordance with Australian Standards
- Implement an EIS in the scenario that an environmental issue arises that is accordance with Australian Standards
- Identify any possible environmental or hazardous issues that may result from feasible design solutions that are identified
- Conduct thorough investigations into any environmental issues that arise as part of the EMP

### 4.2.2 Environmental Evaluation Procedure

As part of the EMP established at Precision Engineers, an Environmental Evaluation Procedure (EEP) has been developed in accordance with our company ethics of having a firm stance on protecting the environment. Outlined in Figure 4, is a representation of the EEP. This accurately details the process in which potential hazards and environmental risks are identified, and how they are managed through the development of projects.



Precision Engineers prides itself on maintaining a high standard when it comes to implementing the

Figure 4: Environmental Evaluation Procedure (EEP)

EEP, and specifically in relation to detecting and identifying hazards and environmental risks that may arise on a project. An innovative procedure and technique that has been in use for some years now, is the Environmental Hazard and Risk Assessment Table, which is highlighted in Table 1 below.

Table 1: Environmental Hazard and Risk Assessment

Probability	Consequence				
	Insignificant	Minor	Moderate	Major	Disastrous
Highly Likely	S	S	H	H	H
Likely	M	S	S	H	H
Unlikely	L	L	M	S	H
Rare	L	L	M	S	S

Table 2: Environmental Hazard and Risk Assessment Key

Symbol	Risk
L	Low
M	Medium
S	Substantial
H	High

The Environmental Hazard and Risk Assessment table effectively enables experienced personnel at Precision Engineers, to identify potential hazards and environmental risks that may be found on a project, so they can be categorised for further investigation and analysis. This results in the form of identifying the probability of a hazard or risk impacting the environment on the project, while in accordance monitoring the consequence of that hazard or risk if it is not managed in the correct manner. Effectively, this crucial procedure, provides a professional and quality assurance that all

potential hazards and risks that are associated with the environment and the project, are identified, analysed, managed and upheld to Australian Standards and Regulations.

#### 4.2.3.1.1 Prevention, Mitigation and Management Measures

- Conduct thorough investigation and surveys into conservation importance and significance
- Consult with Adelaide City Council as to any tree protection rights, vegetation acts that must be complied with before construction

#### 4.2.3.2 Fauna

Precision Engineers will consult with Parklands caretakers to develop a flora management plan to reduce environmental impact.

#### 4.2.3.2.1 Precision Engineers Prevention, Mitigation and Management Measures

- Conduct thorough investigation and surveys into conservation importance and significance
- Conduct fauna investigations

#### 4.2.3.3 Ground and Surface Water Management

An investigation into the installation of intercept drains, which effectively can catch the stormwater and redirect it, to minimise any possible sedimentation or erosion that may occur during the construction phase, will occur.

Prevention of sedimentation, erosion or contaminated water is pivotal to Precision Engineers ground and surface water management as part of the Environmental Evaluation Procedure (EEP).

#### 4.2.3.3.1 Precision Engineers Prevention, Mitigation and Management Measures

- Conduct thorough ground water and surface investigations into Hackney Road
- Adhere to any SA Water and Adelaide City Council legislations, regulations and Australian Standards
- Conduct risk assessment based on the current stormwater supply's conditions, to assess and mitigate hazards and risk associated with project being adjacent to River Torrens
- Store and keep any hazardous materials in the construction process away from any stormwater drainage systems and River Torrens
- If feasible, provide more stormwater drainage systems infrastructure to divert water and minimise congestion and floods
- The installation of intercept drains, to redirect stormwater
- Ensure cleanliness of construction site is equivalent to necessary Australian Regulations and Standards

#### 4.2.3.4 Soil and Site Contamination

As part of the Environmental Evaluation Procedure (EEP) that is upheld by Precision Engineers, a detailed site and A soil contamination investigation is mandatory.

##### 4.2.3.5.1 Precision Engineers Prevention, Mitigation and Management Measures

- As part of the Environmental Evaluation Procedure (EEP), conduct studies and through research into:
  - The cause and effects of vibrations from the use of heavy machinery and vehicles on the local community and environment
  - Ways in which to counter noises causes from the use of heavy machinery, vehicles and general construction work on the site of the project

#### 4.2.3.6 Air Quality

Air quality is a fundamental component to be aware of when it comes to any construction work on a project. It is vital that the upmost care and consideration is taken into account when the environment is concerned.

##### 4.2.3.6.1 Precision Engineers Prevention, Mitigation and Management Measures

- As part of the Environmental Evaluation Procedure (EEP), conduct comprehensive assessment into the quality of air surrounding the projects construction site and surrounding area
- Positively liaise with the community as to construction work that is to be done and the mitigations and measures put in place to minimise pollution and positively affect the air quality in the environment
- Devise a construction traffic management scheme for drivers of vehicles and machine operators to reduce exhaust fumes
- Restrict speed limit of vehicles within construction site and surrounding area, to lessen footprint of gasses on the environment
- Where possible, cover any area where dust emissions are possible
- On a regular basis, ensure that surfaces are watered where generation of dust is possible and can cause effect to environment
- When strong winds are present within the construction site, limit the use of heavy machinery for excavations and the use of vehicles to minimise any dust generation

#### 4.2.3.7.1 Precision Engineers Prevention, Mitigation and Management Measures

- Before any work is to be completed on site in the construction phase, assess area for any potential harm on environment and future workers
- Generate practical solutions to prevent dust disturbances on site
- If the disturbance of dust through wind or construction work cannot be prevented, deploy appropriate measures to ensure dust control

The infrastructure planning will be ensured to coincide with the local government policies and requests of the vast ownerships within the area, where members of the team will be dedicated to achieving this.

Special aestheticizes will be put in place to preserve and minimize any effects to gardens or river banks, with planning allowance to any unforeseen prospective projects. The scope of our urban planning team will be ensuring that our strategic plan is followed and tailored to the best of the possible outcomes.

## 5.0 COSTING SCHEDULE

Table 1 contains a breakdown in regards to the allocation of funds for the feasibility study. All positions held, hourly pay rates and man hours dedicated to this project are outlined within this table. All figures are calculated assuming 15 hours per week dedicated to the O-Bahn City Access Project for a duration of 7 weeks. Precision Engineers employs 32 highly skilled and motivated professionals, who between them hold a vast wealth of knowledge and experience. Each individual has proven themselves as a worthy advocate in his/her selected field, and will strive to produce work of the highest possible standard. With this in mind, the company intends to maintain the selected members throughout the seven week duration of the feasibility study.



Table 3: Feasibility Work Plan

Management				
	Qty	\$/hr	hr (total)	\$ (total)
Project Manager	1	240	105	25200
Assistant Project Manager	1	220	105	23100
			Total	\$ 48,300.00
Quality, Safety and Environment				
	Qty	\$/hr	hr (total)	\$ (total)
Team Leader	1	200	105	21000
Quality Engineer	1	160	105	16800
Principal Environmental Engineer	1	160	105	16800
OHS Specialist	1	120	105	12600
Graduate Engineer	1	120	105	12600
			Total	\$ 79,800.00
Urban Planning				
	Qty	\$/hr	hr (total)	\$ (total)
Team Leader	1	200	105	21000
Urban Planner	2	120	105	25200
			Total	\$ 46,200.00
Utilities				
	Qty	\$/hr	hr (total)	\$ (total)
Team Leader	1	200	105	21000
Electrical Engineer	1	160	105	16800
Water Engineer	2	160	105	33600
Graduate Engineer	1	120	105	12600
			Total	\$ 84,000.00
Geotechnical				
	Qty	\$/hr	hr (total)	\$ (total)
Team Leader	1	200	105	21000
Pavement Engineer	1	160	105	16800
Graduate Pavement Engineer	1	120	105	12600
Bridge Foundations Engineer	1	160	105	16800
Graduate Bridge Foundations Engineer	1	120	105	12600
			Total	\$ 79,800.00
Structural				
	Qty	\$/hr	hr (total)	\$ (total)
Team Leader	1	200	105	21000
Principal Structural Engineer	2	160	105	33600
Principal Façade Engineer	1	160	105	16800
Graduate Structural Engineer	2	120	105	25200
			Total	\$ 96,600.00
Transport				
	Qty	\$/hr	hr (total)	\$ (total)
Team Leader	1	200	105	21000
Senior Transport Engineer	1	180	105	18900
Principal Engineer	2	160	105	33600
Graduate Engineer	2	120	105	25200
			Total	\$ 98,700.00

Grand Total	\$ 533,400.00
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## 6.0 STANDARD CONDITIONS OF TENDER

Precision Engineers is committed to the National Standards of Quality, Environmental and Safe Practice Standards of Specification. We have sought third party accreditation for the systems detailed below, which ensures that Precision Engineers produce work to the highest standards.

Any works undertaken will be completed in accordance with Precision Engineers Services Business Management Plan, which includes certification in the following:



Figure 5: Company Quality Standards

### 6.1 Company Quality Assurance Statement

Precision Engineers is dedicated to producing the highest standard of quality in all projects, not only in Australia, but worldwide. Our accreditation in ISO 9001 Quality Management Systems through SAI Global will assist us in delivering the project to the highest quality. The combination of our businesses quality principles and ISO accreditation won us the Australian Business Excellence Award in the year 2015 for the Riverbank footbridge over the Torrens River, Adelaide. Demonstrating Precision Engineers capacity to undertake similar projects, ensuring that outputs at major milestones and project closure are of the highest possible standard.

### 6.2 Company Insurances

Precision Engineers has policies with CGU for public liability and professional indemnity insurance to the value of \$20,000,000. Certificates of insurances can be provided upon request.

## 7.0 POST FEASIBILITY AWARD

Following assessment of the tasks outlined in Section 3 of this tender. Precision Engineers will liaise with the client to provide a compressive feasibility report that addresses the following:

- Cost
- Environmental impact
- Safety
- Geotechnical profile
- Design options

The feasibility report provided to the client will offer guidance on selecting the appropriate design option that will address:

- Transport
- Accessibility
- Safety
- Environmental
- Employment opportunity

As outline in the brief supplied by the client.

Upon the award of the O-Bahn city access project – feasibility study tender, Precision Engineers will mobilize their project team. Initial mobilization tasks will include a comprehensive site inspection, project meetings with the client and will implement our Quality assurance systems.

Daniel Caddy

Project Manager

Precision Engineers Pty Ltd.



## Tender for O-Bahn City Access Project



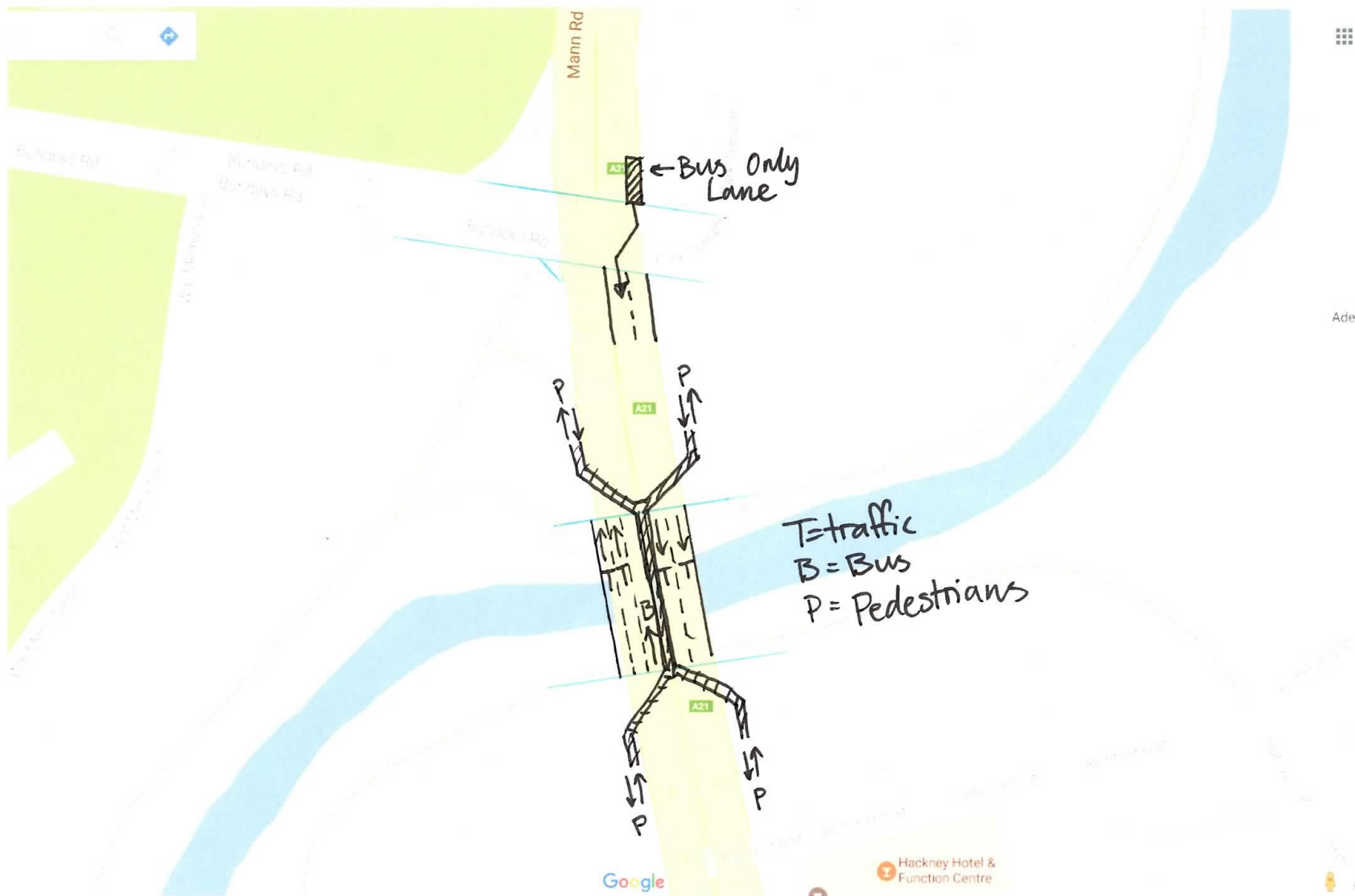
### APPENDIX



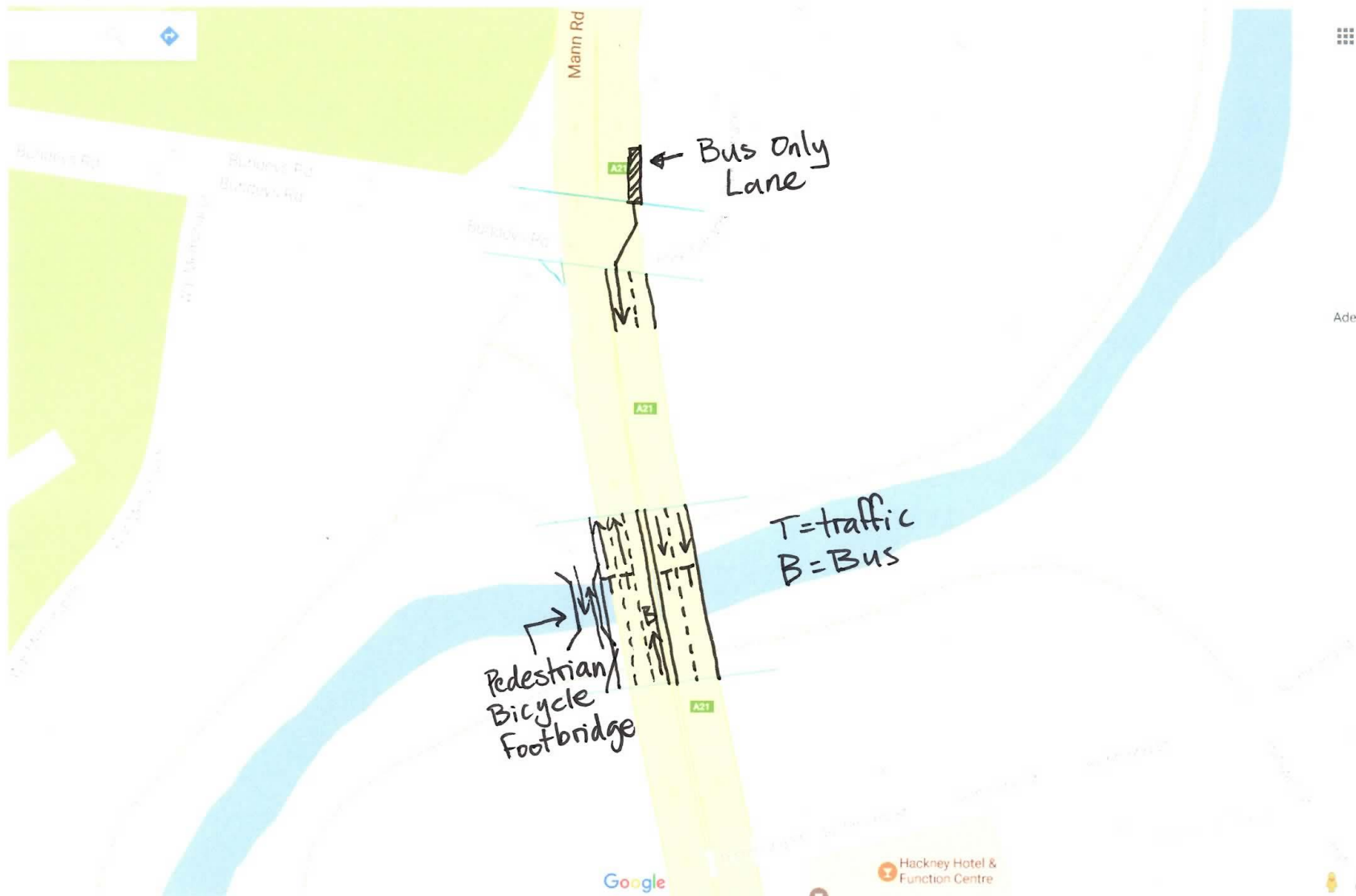
Redevelopment of Bridges



## Pedestrian Rerouting



Dedicated Pedestrian Bridge



Dedicated Bus Overpass

