



Engineering Surveyors

"Your Partner in Engineering"

TAO

Transport for NSW
Technically Assured
Organisation



About us

VFT Engineering Surveyors (VFT) provide engineering services including drawings, scanning and point cloud modelling and the providing of qualified surveying resource to client managed projects. VFT provide services to the construction and mining industries throughout Australia. We use high precision Leica Instruments, 3D Laser Scanners, GPS, UAV's, and digital levelling equipment. Survey calculations and reductions are carried out using 12d Model, Leica Cyclone, AutoCAD and other survey software packages.

Technically Assured Organisation - (former AEO)

VFT have successfully satisfied the requirements of Transport for NSW & the Asset Standards Authority to become an authorised TAO for surveying works to tender on and work directly for TfNSW.

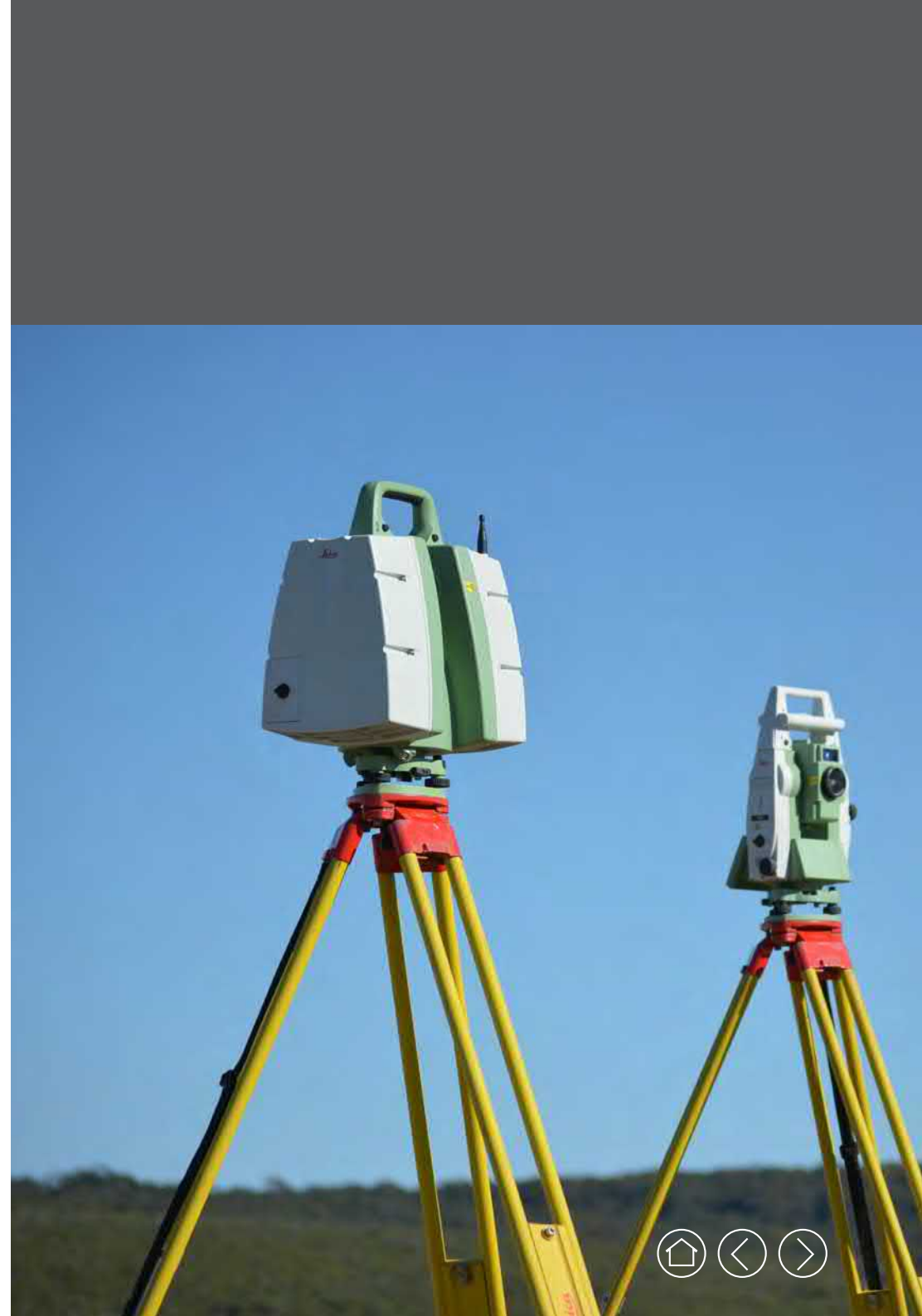


Quality

VFT are certified by BSI group in ISO 9001:2015 Quality Management Systems, and self certified in ISO 45001, ISO 14000 & ISO 50001 with the view to be certified by Q2 2024.

Our Services include:

- › TfNSW, Sydney Trains and Sydney Metro Technically Assured Organisation (TAO) Surveying
- › Structural, concrete and steel surveying
- › Bridge surveys
- › Rail formations and track surveys
- › Building and infrastructure surveys
- › Drainage and underground services (Including Sydney Trains DSS)
- › Road works and earthworks surveys
- › Machine control and management
- › UAV Photogrammetry, video surveys & aerial quantity surveys
- › 3D Lasers Scanning and data reductions
- › Quantity surveys & calculations
- › Concrete or asphalt paving surveys
- › Dam construction surveys
- › Primary & Secondary control surveys
- › Survey management plan development
- › As-Constructed surveys and reports



Our portfolio

The following pages list a few of our most recent projects.



Over the last 10 years across a number of projects VFT have shown a high level of class and professionalism. It's great being able to work with a sub-contractor where nothing is ever a problem. As a company they are always focused on meeting the client's needs and expectations. Speaking from first-hand experience VFT are a pleasure to work with, always providing a professional service as well as using the latest survey equipment and software. I would have no hesitation in recommending VFT for any future projects.

JASON TURNBULL, Laing O'Rourke
Site Superintendent

Having efficient professional surveyors is fundamental to the success of any project. VFT has provided this service on a number of civil and mine site infrastructure projects I've been involved with over the last ten years. Their surveyors have the combination of technical experience, work ethic and positive attitude to offer any client value for money. VFT management really listen to the client and are able to respond quickly to meet changing requirements. I would recommend them to any prospective client because the survey company you choose can make a real difference to the bottom line.

MARK PULHAM, CPB Contractors
Construction Manager



CLIENT ►►

LAING O'ROURKE

Central Station Metro

Sydney Metro City & Southwest

Sydney NSW, Australia

VFT was contracted by Laing O'Rourke for preliminary works and retained for the construction phase surveying of the Sydney Metro works at Central Station from 2018. Adopting the existing 3D survey control network, VFT extended this throughout the entire station and adjacent work sites.

Accurate as-built surveys of existing structures and rail infrastructure, including sub-surface and above ground utilities, are routinely delivered to enable temporary works and the final project designs. Supporting the Sydney Metro work at Central Station, VFT has used innovative and cost-effective solutions, including intricate traditional surveying and extensive 3D laser scanning for both rail and engineering requirements.

A significant achievement was the off-site fabrication of the new Northern Concourse roof. The roof structure was preassembled at Kurri Kurri in the Hunter Valley, as-built surveyed and referenced, then dismantled, transported to site and accurately reassembled using the survey reference marks to position each roof component.

How VFT contributed

By providing combined rail and engineering surveying expertise to the project, the client was able to reduce expenditure and avoid on-boarding two separate surveying SME's to service both sectors. VFT continue to provide a dedicated team to the project, retaining critical staff to manage the ongoing surveying requirements.



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GARTNERROSE

Transport Access Program (TAP)

Sydney NSW, Australia

The Transport Access Program (TAP) includes the design, procurement, construction, commission and integration of existing stations within the NSW rail network.

The works to the stations include, but are not limited to;

- Design and construction of new lifts or new footbridges
- Civil works to existing transport interchange and parking; this includes to kiss and ride, bus stops and surrounding footpaths;
- Upgrades or installation of new ambulant toilets
- Ancillary works required to achieve full compliance

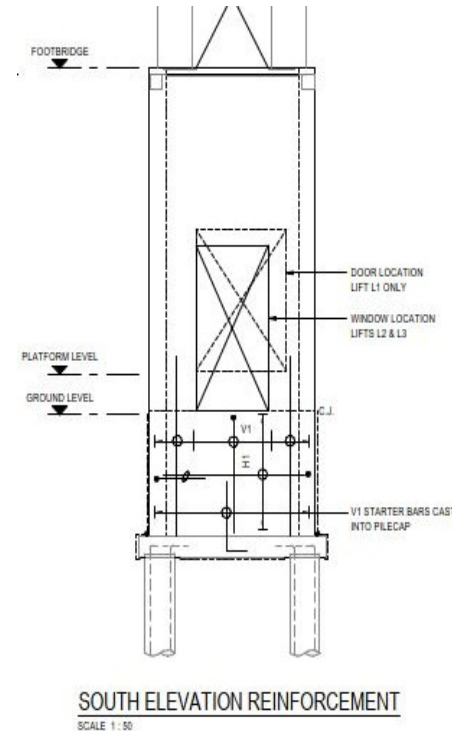
How VFT contributed

VFT have led the surveying requirements on numerous (TAP) upgrade projects throughout greater Sydney and the Central Coast. From providing initial topographical & detailed information at the design phase through to As-Constructed plan preparations & project delivery.

On TAP projects VFT have carried out:

- Survey control verification & project control installation
- Boundary definition, pegging & easement identifications
- Detailed Site Surveys (DSS) & topographic surveys for design use
- Model management and data delivery on behalf of the client
- Construction Set-outs, lifts, stairs, road works (kiss and drop zones)
- Volume, quantities and contractor variation assistance

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**PACIFIC
COMPLETE**

LAING O'ROURKE

Woolgoolga to Ballina

Pacific Highway Upgrade

Mid North Coast NSW, Australia

VFT provided highly skilled auditing surveyors for Laing O'Rourke and TfNSW/RMS.

Pacific Complete was engaged by TfNSW to deliver the Woolgoolga to Ballina pacific highway upgrade project which duplicated around 55 kilometres of existing highway into the now four lane divided road from Woolgoolga (North of Coffs Harbour) to Ballina.

The now complete project:

- Saves 13 kilometres in travel distance by reducing overall length from 180 kilometres to 167 kilometres
- Reduces travel time from 130 minutes to around 105 minutes saving 25 minutes
- Allows a higher posted speed limit of up to 110km h
- Improves travel reliability through better flood immunity fewer incidents and more readily available alternative routes
- Reduces crash rates by up to 27 per cent due to divided lanes



WestConnex

Haberfield to St Peters Interchange

Sydney NSW, Australia

The M4-M5 Link Tunnels project is the final and most critical component of WestConnex & VFT were called upon due to a vast RMS/ TfNSW road and pavement surveying experience to help steer the surveying requirements and close out the project's back-end works.

The M4-M5 Link Tunnels consists of twin 7.5-kilometre four-lane tunnels linking the New M4 tunnels at Haberfield to the New M5 motorway at St Peters. This link will create a western bypass of the CBD which will allow the full benefits of WestConnex to be realised.



WestConnex M4-M5 Link Tunnels



Sydney Yard Access Bridge

Sydney NSW, Australia

Laing O'Rourke was responsible for the design and construction of a bridge for controlled heavy vehicle access for construction and operational maintenance from Regent Street into the rail corridor (Sydney Yard) at Central Station to facilitate the construction of the Sydney Metro works.

Construction of the Sydney Yard Access Bridge involved the use of sites on Regent Street alongside Mortuary Station, and within the rail corridor in Sydney Yard.

VFT were engaged to set-out & survey the new overhead bridge structure and adjoining infrastructure while maintaining a critical arterial commute into Sydney's busiest railway station.

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LAING O'ROURKE



Western Sydney Waste Water Treatment Plants

Riverstone, St Marys & Quakers Hill

Western Sydney NSW, Australia

The scope of the projects involved doubling and tripling the size of the existing waste water treatment plants to allow for the growing population in Western Sydney.

VFT provided the setout for the provision of formwork, reinforcement and concrete pouring (FRP) for the construction of a Biological Reactor, Biological Reactor Distribution Chamber, Secondary Flow Distribution, and Secondary Clarifiers, three off RAS Pump Stations, Tertiary Flow Distribution Chamber, and Tertiary Clarifier.

VFT were employed as the main survey firm for the project and as a result were contracted by all the main civil contractors and subcontractors, Sydney Water (direct) UGL, Quay Civil, AJM, Christie Civil, Diona, Pructon, Williams River Steel, Guidera O'Connor

VFT remain the lead surveyors for the projects and are now involved with the final civil works.



NorthConnex

Sydney, NSW

Sydney's NorthConnex is a nine kilometre tunnel that links the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at West Pennant Hills, the newly built connection tunnels remove around 5,000 trucks from Pennant Hills Road each day. NorthConnex is currently the longest road tunnel in Australia.

VFT were engaged to carry out both tunnel and surface surveying for the NorthConnex project.

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NorthConnex



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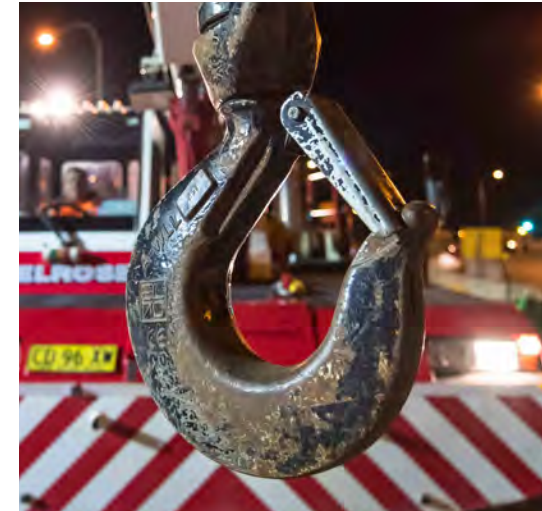
Narellan Rd

Narellan Road Upgrade – Stage B

Seymour Whyte Constructions were awarded the second stage of the works which involved the upgrade and widening of approximately 8 kilometres of Narellan Road between the M31 Hume Motorway and Camden Valley Way and from the access road to the TAFE & University of Western Sydney at Campbelltown to the Blaxland Road Gilchrist Drive intersection.

VFT were engaged on reputations and past performances to carry out the following:

- Establish Survey control network
- Quantity calculations for the end of month payments
- Site set out conformance and reporting
- Assist Seymour White staff with planning requirements
- Utilities pick up and depth requirement checks



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Roy Hill Mine Infrastructure

Contract 1

Roy Hill was an \$8bn project based in the Pilbara region of Western Australia. VFT were contracted to deliver all survey resources for the Civil and SMP components of the mine infrastructure. Our role included working with the design review team in Perth and then providing all facets of surveying for the construction teams.

VFT surveyors installed the new survey control network for the 10km of overland conveyors and the interlinked mine structures. VFT then provided set out and as-built surveys of the mine structures. The Roy Hill Mine Infrastructure project was the biggest development VFT had been engaged on at the time.

Contract 2

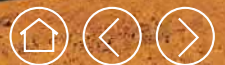
VFT provided the auditing surveyors for Samsung C&T for the Roy Hill Infrastructure Project.

The role included:

- Joint audit surveys
- Maintaining the control network and installing new control
- Per-pour survey checks
- As-built survey checks
- Design reviews
- Volumes calculations, pre and post-build
- Quality validation

Contract 3

Finishing works – Rail calculations & Setout



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LAING O'ROURKE

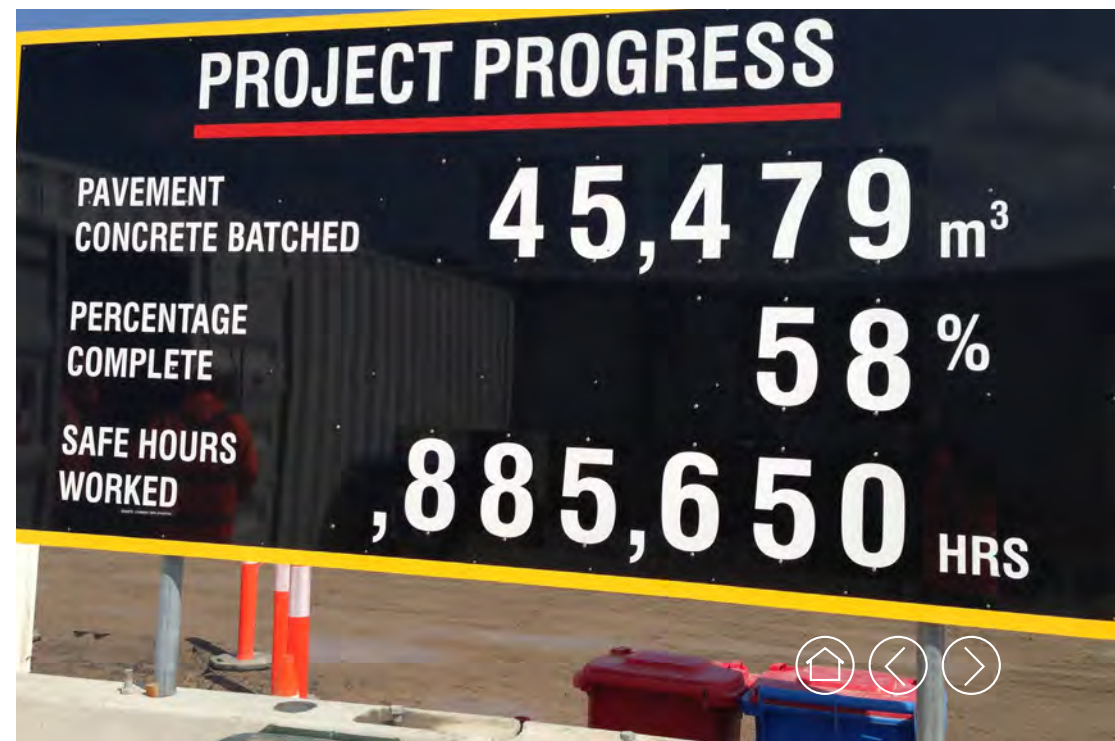
Port Botany Expansion

Port Botany, Sydney NSW

VFT supplied the total survey service to Laing O'Rourke for the Port Botany Expansion (Terminal 3 project). With over ten surveyors contributing to the construction of the new section of the Sydney International Container Terminal. This parcel of 46Ha of reclaimed land consisted of:

- 100,000m³ of concrete paving (built to Roads & Maritime Services – specifications)
- Rail and associated structures to support a rail stacking crane system
- 42km underground services (high and low voltage, communications, fire, sewer and water)
- 11 km of underground drainage
- 200,000m³ of rigid pavements
- Rail siding and rail tie-in works

VFT were engaged based on skills required, past performances & consistent quality deliverable's.



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Kundabung to Kempsey Upgrade

The Roads and Maritime Services (RMS) were tasked in upgrading the Pacific Highway from north of Barry's Creek near Kundabung to the Southern end of the Kempsey bypass. The project was jointly funded by both Federal and State Governments.

The \$165 million upgrade went on to provide 13.7 km of upgraded highway that consists of:

- Twin bridges over Smiths Creek, twin bridges over Pipers Creek, an overbridge at Kundabung Road and a northbound bridge over Stumpy Creek
- A grade separated interchange at Kundabung Road
- Approx six kilometres of local service roads
- Northbound and southbound rest areas at Mingaletta
- A heavy vehicle inspection bay

The RMS contracted McConnell Dowell-OHL JV to construct the Kundabung to Kempsey upgrade. Construction began in September 2014 with project completion in 2017.

VFT were engaged for a vast RMS road work experience in both G71 & G73.



NCIG Coal Export Terminal

NCIG Coal Export Terminal, Newcastle NSW

Laing O'Rourke was engaged by Newcastle Coal Infrastructure Group (NCIG) to build a new Coal Export Terminal.

The project primarily involved constructing a 450m long coal loading berth. Project components included temporary and permanent piling, marine and land structures, earthworks and steelworks.

VFT provided complete survey management of this flagship project for Laing O'Rourke.

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LAING O'ROURKE



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RioTinto

West Angeles Fuel Hub

West Angeles Fuel Hub, WA

VFT were engaged to provide surveying resources to install structural steel and concrete fuel cells for Rio Tinto.

The fuel cells hold up to 4.5 million litres of diesel, the project includes safety bunkers and associated structures.

VFT's knowledge and experience in bulk excavations and quantities along with detailed MEP & services set out/capture gained VFT the role as lead surveyors for the project.



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Wyangala Dam

Wyangala Dam Safety Upgrade, Cowra NSW

Consisting of mechanical, structural and earthworks components, John Holland Group were tasked to upgrade the Wyangala Dam & went on to engage VFT to provide the lead surveying services to install the new spillway gates, breaking mechanisms, bridge crossing and a new Dam access road.

VFT were engaged due to a vast knowledge of Dam construction and Dam wall rising upgrades.



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Elizabeth Quay Pedestrian Bridge

Elizabeth Quay Pedestrian Bridge – Perth WA

The EQPB featured arch and suspension bridge of the is 20m high, 5m wide and suspended over the inlet with a clearance of 5.2m from the waters surface at high tide.

The EQPB includes distinctive architecture and curvature which posed difficult to engineer and build but with VFT's strong survey guidance the project was complete without a hitch. The construction of the EQPB allows cyclists and pedestrians alike to enjoy the view of the city and Quay while allowing recreational vessels to pass underneath.

The intricacies involved with the project and the tight project constraints saw VFT awarded with the survey contract and in-turn becoming responsible for all survey works on the concrete substructure.



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Horizon Power Station

South Hedland, WA

Due to the rapid growth in the Pilbara & Port Hedland region, Horizon Power were tasked in constructing a 60 megawatt power station in South Hedland.

VFT were engaged due to previous experience and detailed set-outs for large scale infrastructure projects.

VFT delivered all critical surveying services required for the earthworks and structures.



Copeton Dam Upgrade Stage 1

Inverell, NSW

The Copeton Dam upgrade included bulk excavation of a fuse plug auxiliary spillway channel & the significant drilling and blasting of approximately 1,200,000m³.

The structures built consisted of a four-bay concrete fuse plug and multiple layered clay core embankments.

VFT were engaged due to previous dam surveying upgrade knowledge and specialities in machine guidance, bulk excavation surveys and detailed structures surveying.

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OB24 Iron Ore Mine

Newman, WA

VFT were the sole suppliers of survey resources and for the management required for the earthworks, road, rail and rail loading facility (TLO) at BHP's OB24 Iron Ore mine.

VFT were engaged due to great structures and civil surveying experience and were responsible for the initial surface excavation surveys and volumes surveys through to as-built handover, monthly volumes for schedule payments and machine control management.



Chatswood Transport Interchange

Chatswood, NSW

Structures, earthworks, road works, rail and associated services.

NGNH

Kimberly, WA

Structures and road works.

Maitland to Whittingham

Hunter Valley, NSW

Bridge structures, earthworks and rail.

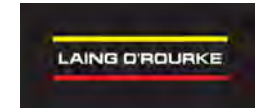
Berth 7 Marine Structure

Geraldton, WA

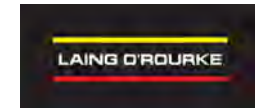
Contract 1: Earthworks and concrete works for Dual Wagon Tipper (top down construction), 300mx90m shed, conveyor and transfer tower foundations and earthing grid.

Contract 2: Construction of new berth for Karara Iron Ore Project at the Geraldton Port. Comprising of temporary and permanent piling, marine structures, earthworks and concrete structures.

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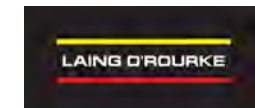
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Company References

Martin Bower Survey Manager
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Greg Cook Project Director
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Metro Works CSM)

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David Mares Survey Manager
Bouygues (NorthConnex NCX)

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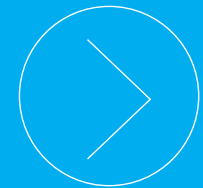
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Scanning and Digital Engineering



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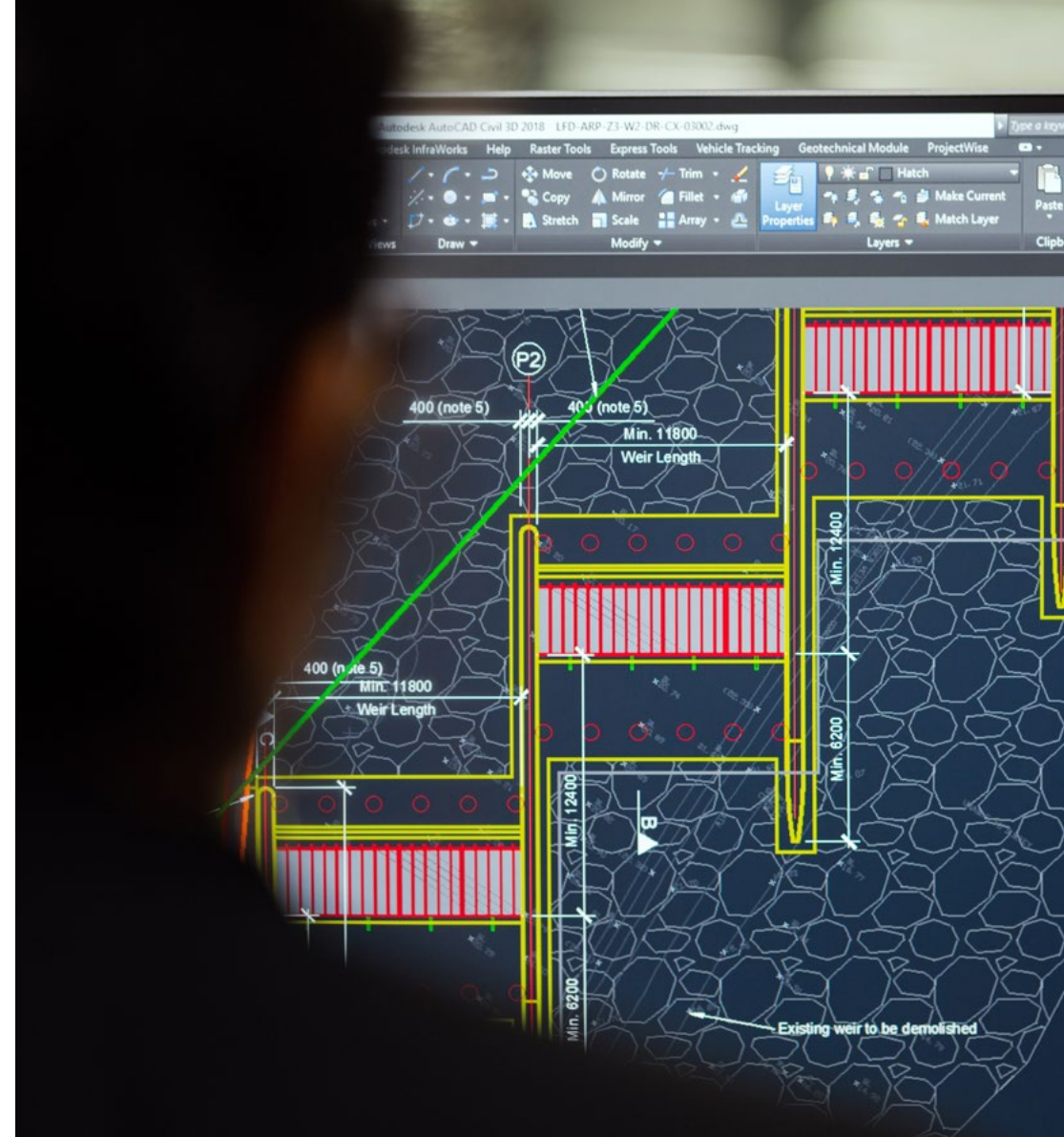
Scanning and Digital Engineering Division

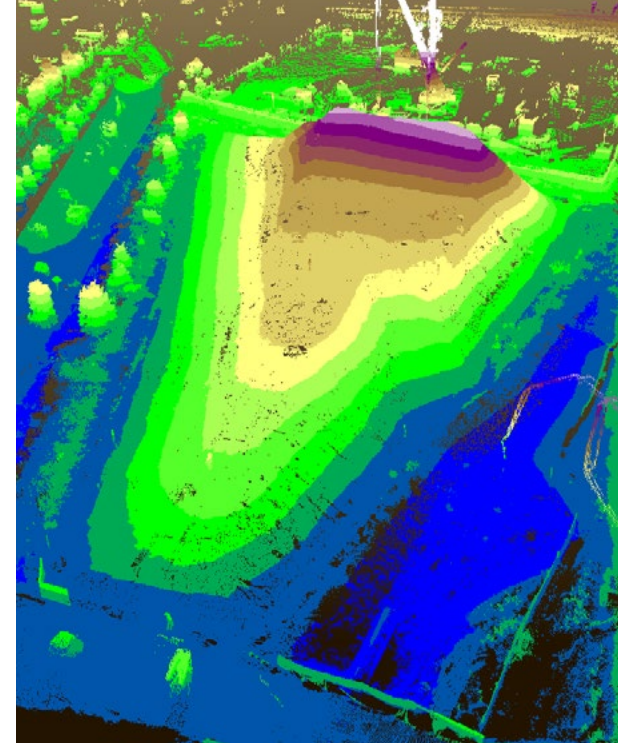
Our services

- › Terrestrial Laser Scanning (TLS)
- › Drone / Unmanned Aerial Vehicle (UAV) surveys
- › Building Information Modelling (BIM) & CAD
- › Dimension Control and Monitoring
- › Digital Engineering support
- › Point Cloud Processing
- › Feature Extraction

About VFT

Specialists in large scale Civil Engineering, Architectural, and Infrastructure projects with offices in NSW and QLD. VFT Engineering Surveyors (VFT) are experienced, industry leaders delivering the latest 3D Laser Scanning and modelling solutions to support your next project.





With interest in any of our services, please allow VFT to help you through your next project.

For any further information please feel free to contact us:

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3D Laser Scanning in your industry



Infrastructure & Construction

3D Laser Scanning provides superior, detailed scans over what can be achieved with traditional surveying methods. VFT offer monitoring, as-builts, detailed surveys and project conformance. With rapid delivery of point cloud, CAD drawings and reports we enable the client to make informed and accurate decisions ensuring projects stay on schedule and budget.



Architecture

Architectural 3D Laser Scanning delivers precise data capture with millimetre precision. Delivering detailed site documentation and visualisation of as-built models from which conceptual design can commence with speed and accuracy.



Heritage Preservation

3D scanning is the highest form of detailed preservation and historical capture of buildings and monuments. Output may be used for historical reference or enable historically accurate replication or restoration of monuments, buildings, and façade details. 3D fly through's are a dynamic offering, delivering an engaging way to retain a record of a site that viewers can immerse themselves in.



Mining, Industries and Plant

Mechanical and hydraulic plant components wear, with plant equipment regularly requiring repair, extensions, & modifications. VFT offer 3D Laser Scanning to document tie-ins, extensions, and model plant elements to millimetre accuracies to aid in design, construction, upgrade or replacement.



Film & Lighting Industry

From Hollywood screen productions to lighting design for live audiences at the Sydney Opera House. 3D Laser Scanning provides the ability to digitally assess and modify lighting, cameras & prop positions accurately by modelling the captured scan data of internal structures, existing beams, and ceiling mounts. VFT supply textured mesh models at high resolutions, providing for both visually pleasing models and millimetre accuracy.



Fabrication

Laser Scanning has developed into an integral part of metal fabrication projects where millimetre tolerances need to be met. Some metal components cannot be modified quickly and demand extreme precision in order to match adjoining infrastructure. Scanning of the prefabricated materials and the site surrounds allows for the client to be spatially aware how the fabricated material is behaving before and after fabrication and makes for error free installation and welding.



What VFT deliver for you

Revolutionising surveying, 3D Laser Scanning captures every point in the field of view and enables the client to select their choice of data, this process of capture enables clients to efficiently plan, design and construct.

3D Laser Scanning reduces the requirement for excessive site visits and improves overall project cost.

The captured 3D scanned data can be used & exported into various model types & assets based on your specific project requirements.

Our service offering includes:

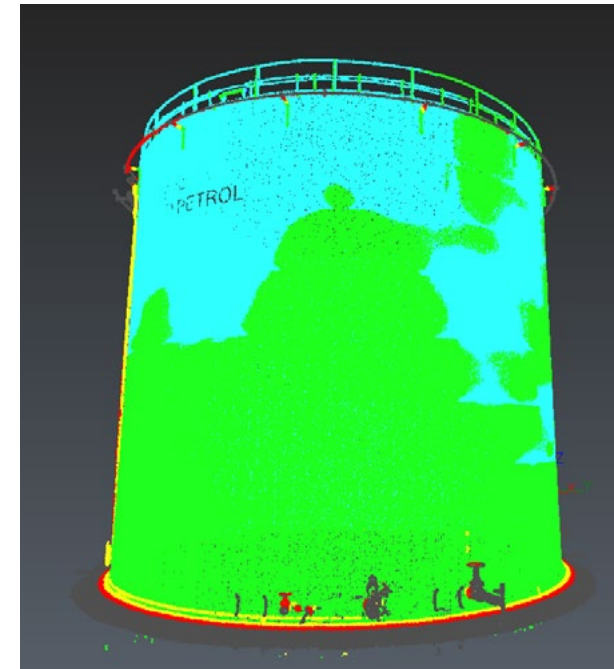
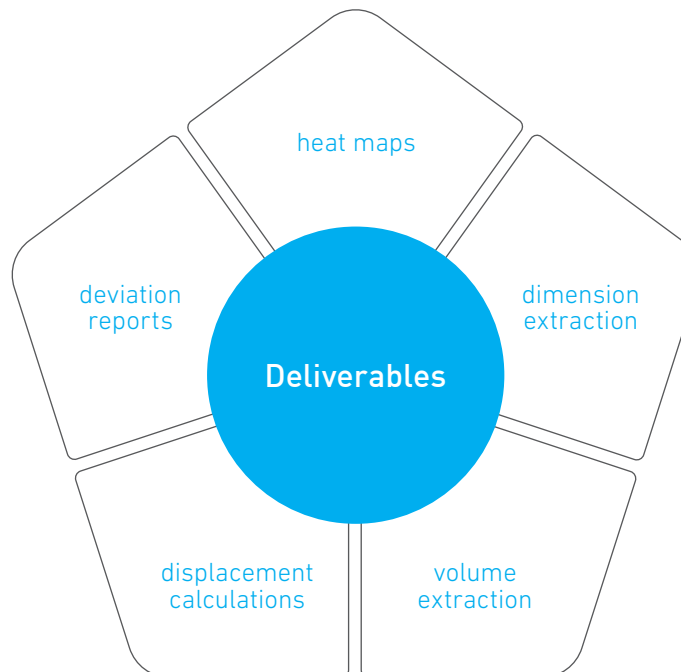
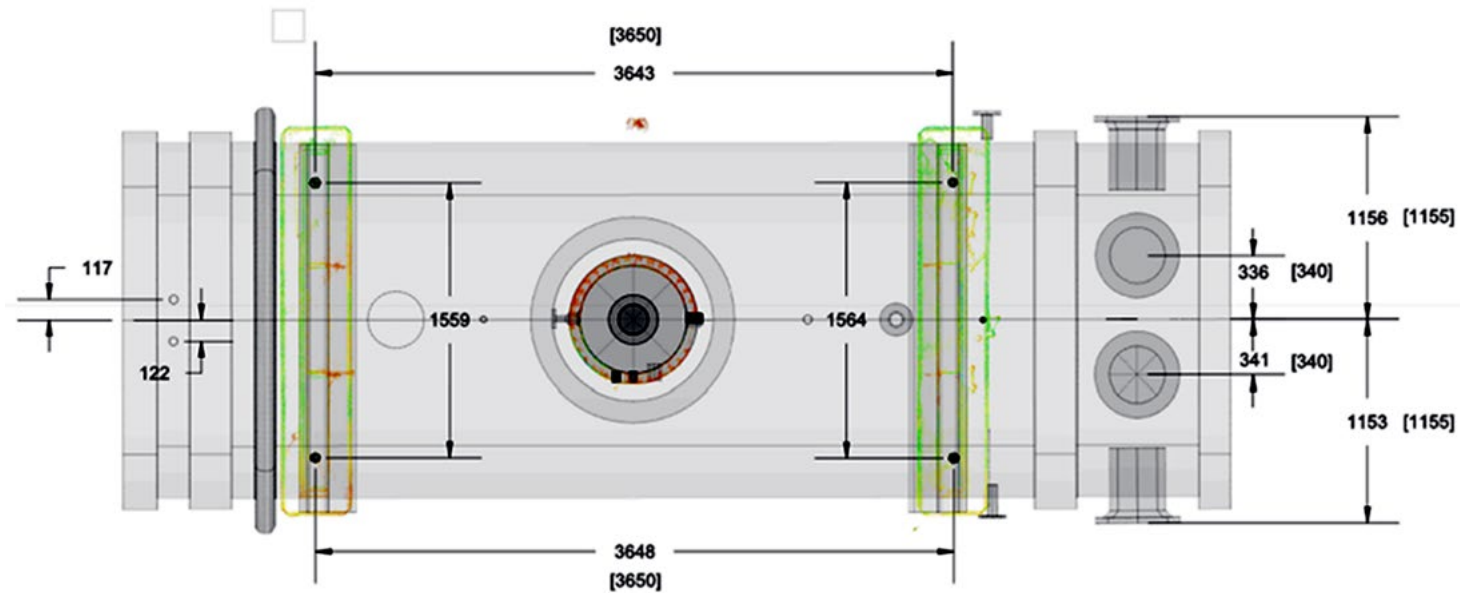
- › Point cloud
- › Building Information Modelling (BIM) ,3D CAD and Revit models
- › Dimension Control and Monitoring
- › Feature Extraction and Topographic Plans
- › Digital Engineering Support
- › Coordination & Clash Detection
- › Unmanned Aerial Vehicle (UAV)
- › Flythrough animations
- › Meshes including deviation and monitoring reports
- › Stockpile volume reports

Dimension Control and Monitoring

Dimension Control has many applications such as Pre and Post fabrication conformance. It is the key to reducing man-hours, especially in potentially hazardous areas where accesses or site time is restricted.

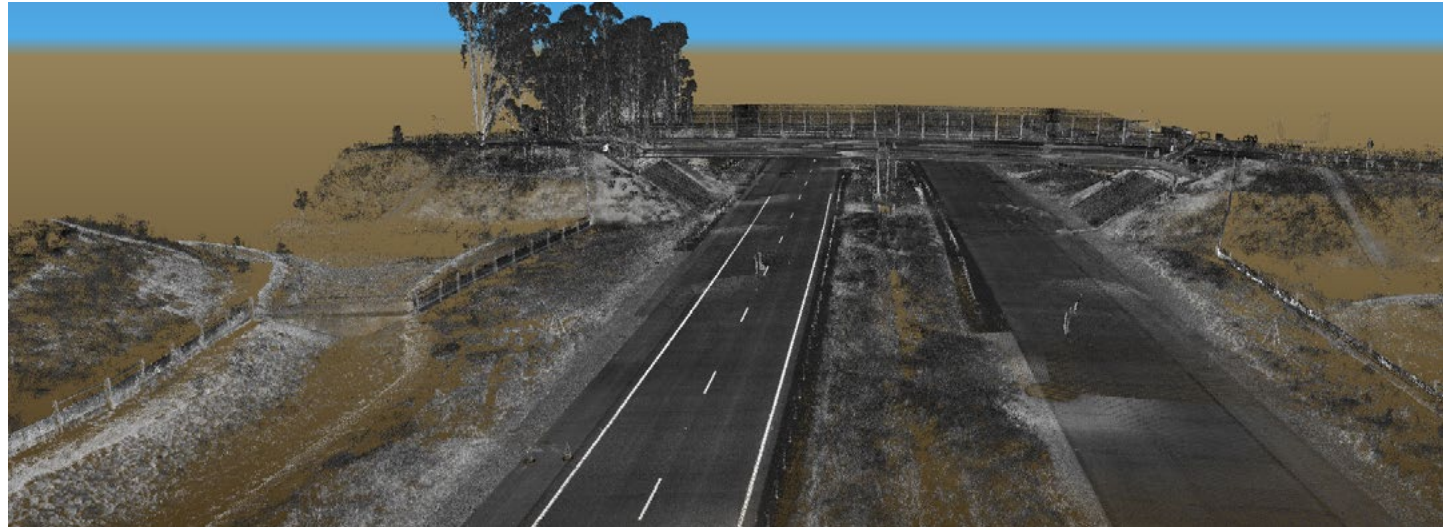
On-going dimension checks and reporting - VFT actively suggest 3D Laser Scanning to our clients in order to monitor deviations from the as-built stage through to development forming a whole picture for the client & enabling the visual representation of site growth through specific stages of the project.

Point cloud data enables the client to go "back in time" to cross examine data & preform extra cross section or long section reports at any given point in the construction phase. This enable past & present millimetre QA.



Pointcloud

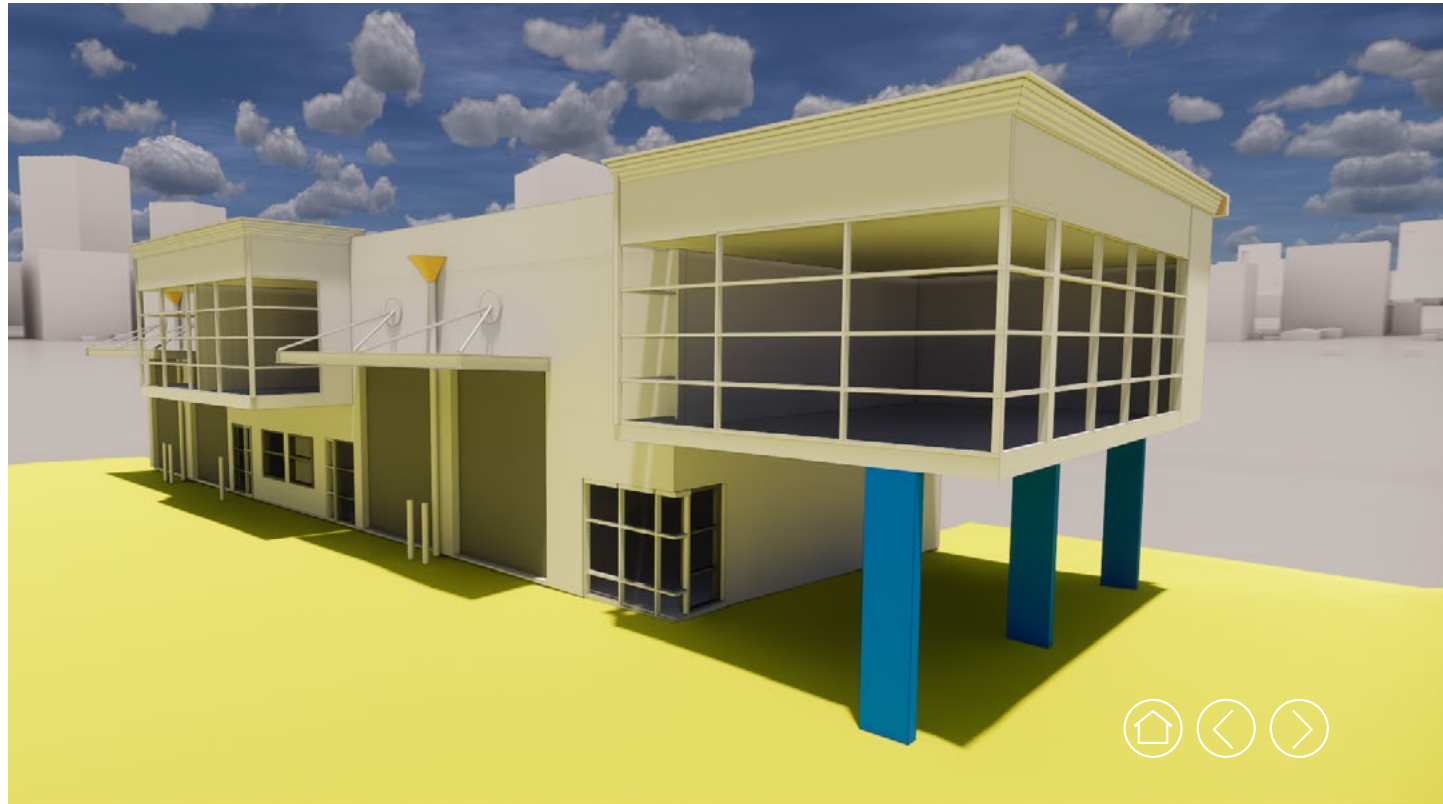
Using industry leading processing programs VFT can take the points captured by TLS & UAV & further process the information for output as PTX, PTS, LAS ,E57, RCS/RCP.

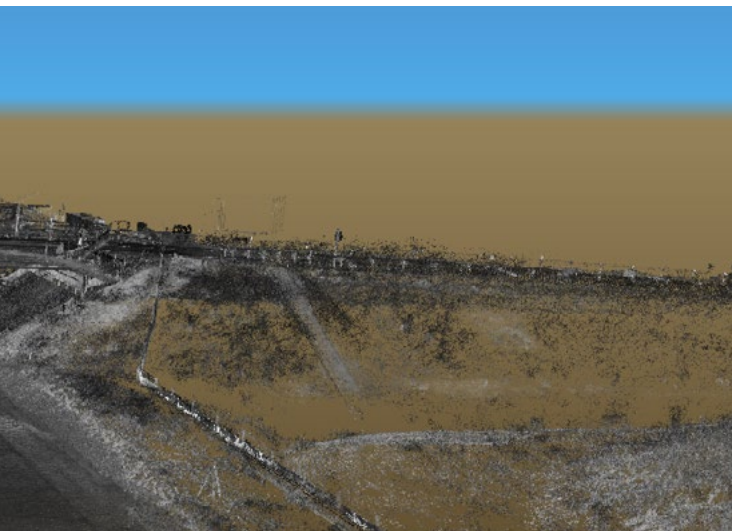


Building Information Modelling and 3D CAD

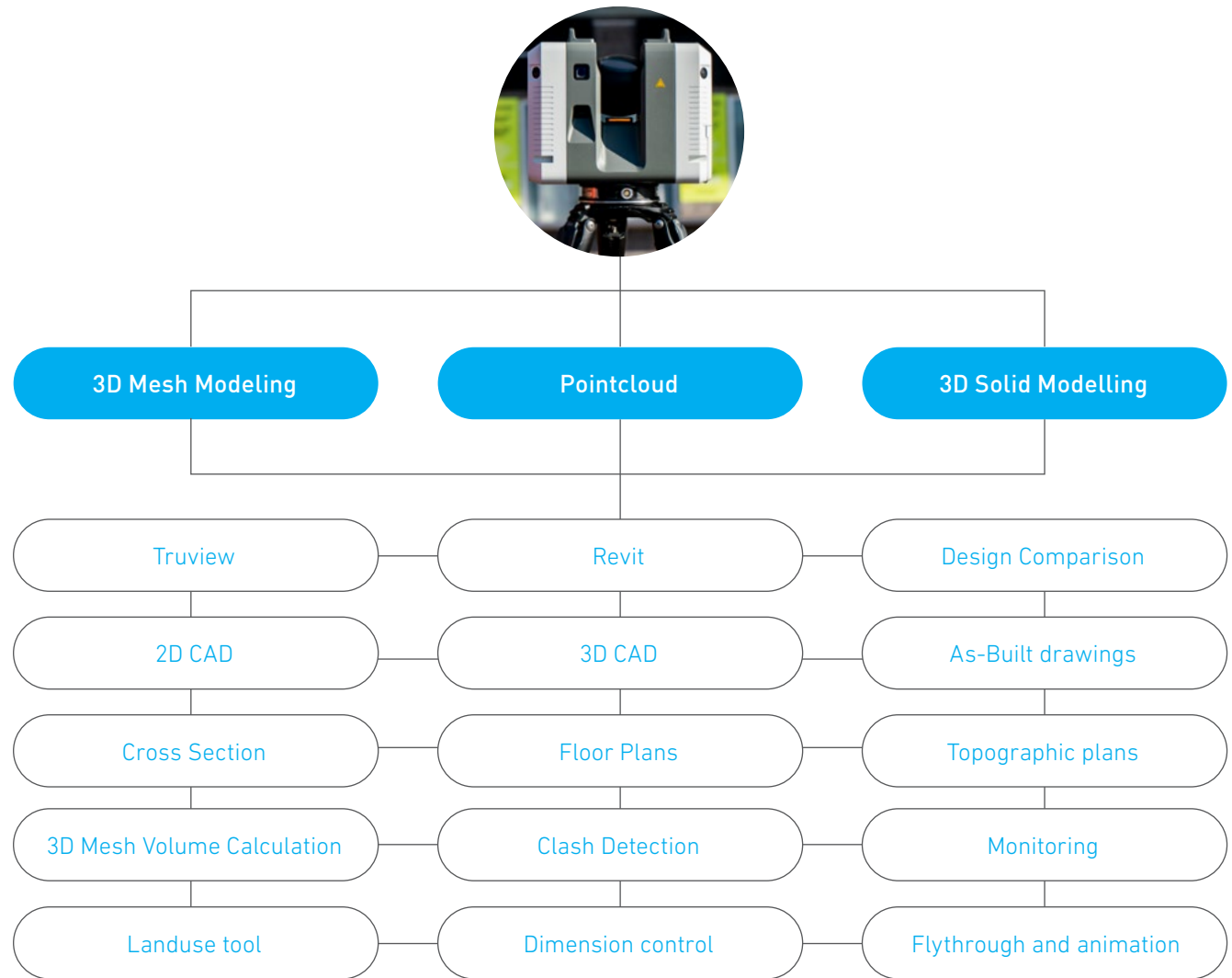
VFT supply accurate, as-built LOD300 BIM ready Revit models. Our goal is to provide on-going support during the life cycle of the project. On-time and accurate as-built models are the bedrock of any successful and seamless design process.

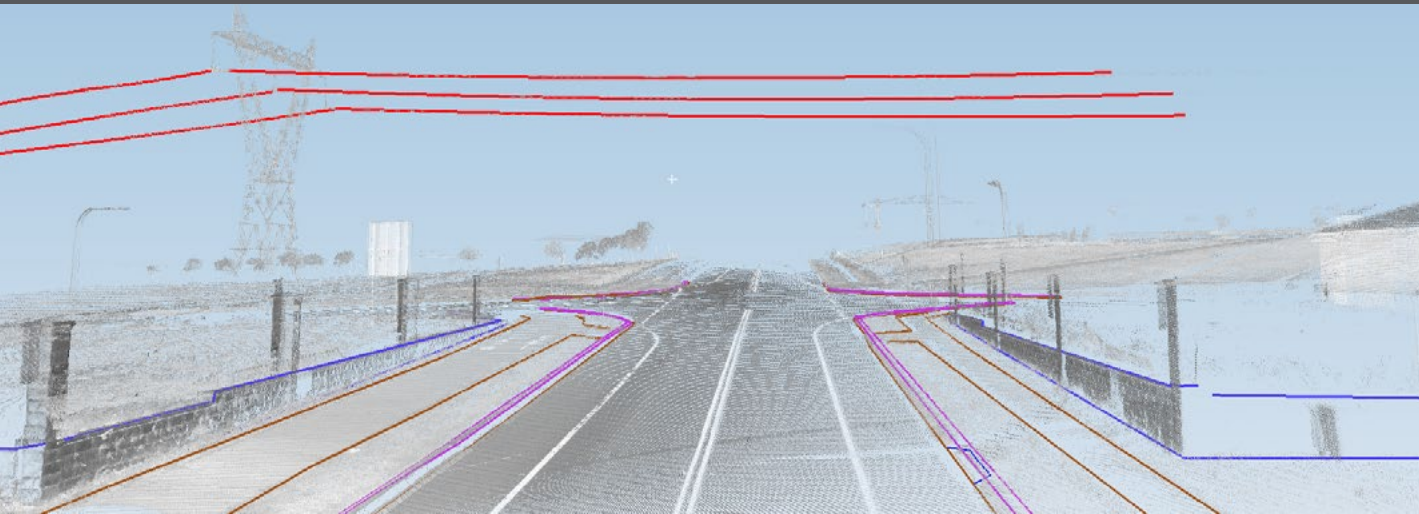
Through rigorous QA processes. Our models are delivered exactly to your requirements ensuring architects, engineers and construction professionals have the required insights to efficiently plan, design, construct and manage buildings and infrastructure.





Pointcloud deliverable chart,
which deliverable suits your project requirements?





Feature Extraction and Topographic Plans

With specialised software and workflows including 3D animating processes, VFT can extract 3D strings, building floor plans, elevation plans and cross sections precisely to aid with the design or as-built process.

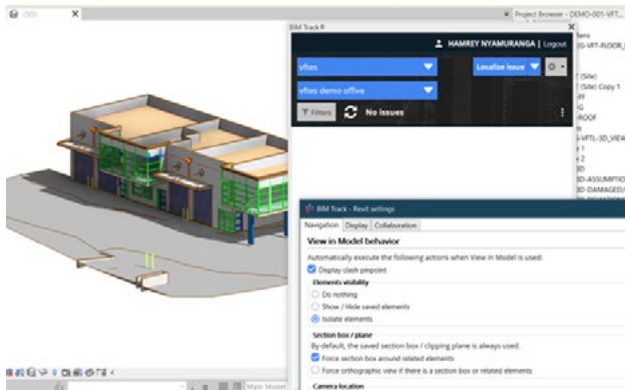
Point cloud provides comprehensive data sets for development of topographic models and plans. 3D Laser Scanning captures a vast amount of information instantly which can be later extracted from the point cloud specified directly to the client's requirements. The advantage of point cloud data is at any point the data is available to revisit, audit or extract further information without extra unnecessary site visits.



Digital Engineering Support

VFT's clients are constantly progressing within the digital engineering space and require the best possible data sets the first time. It has been stated by international construction firms that "Digital Engineering is the art of creating, capturing, and integrating data using a digital skillset. It is about more than creating models. It is about unlocking knowledge and insight, creating the platform for true collaboration".

VFT uniquely provide digital engineering support to Australia's leading construction and infrastructure companies. Utilising the latest equipment places VFT at the forefront of data acquisition, support, and maintenance of a typical common data environment (CDE) with extensive knowledge in conversion of raw data into specific output formats.



Coordination & Clash Detection

In addition to REVIT, VFT developed 3D models are highly reliable and form as the basis of Level 2 BIM and are accurate enough to use in coordination & clash detection. VFT captured scanning data is easily able to be integrated & issued to other coordination platforms such as Navisworks, BIM 360, Asite, BIMcollab, BIM Track, openBIM etc.

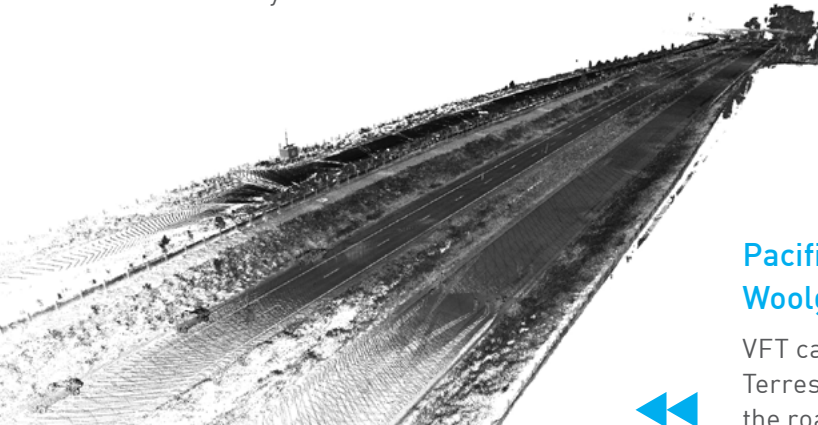
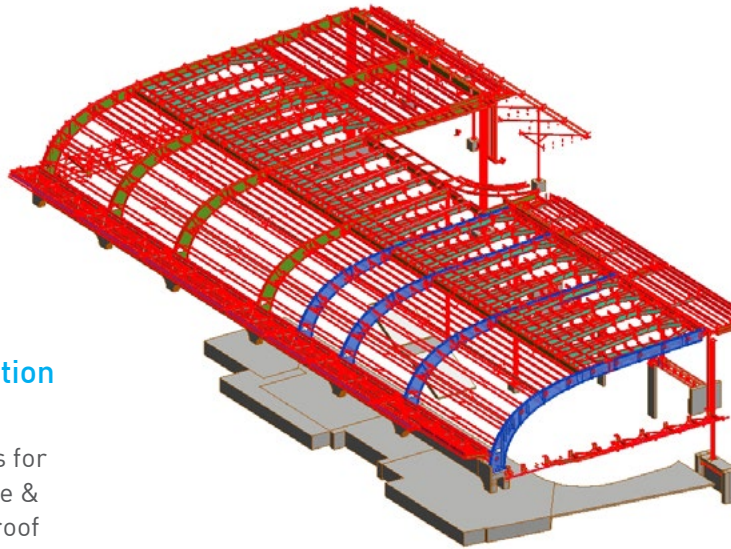


VFT featured examples



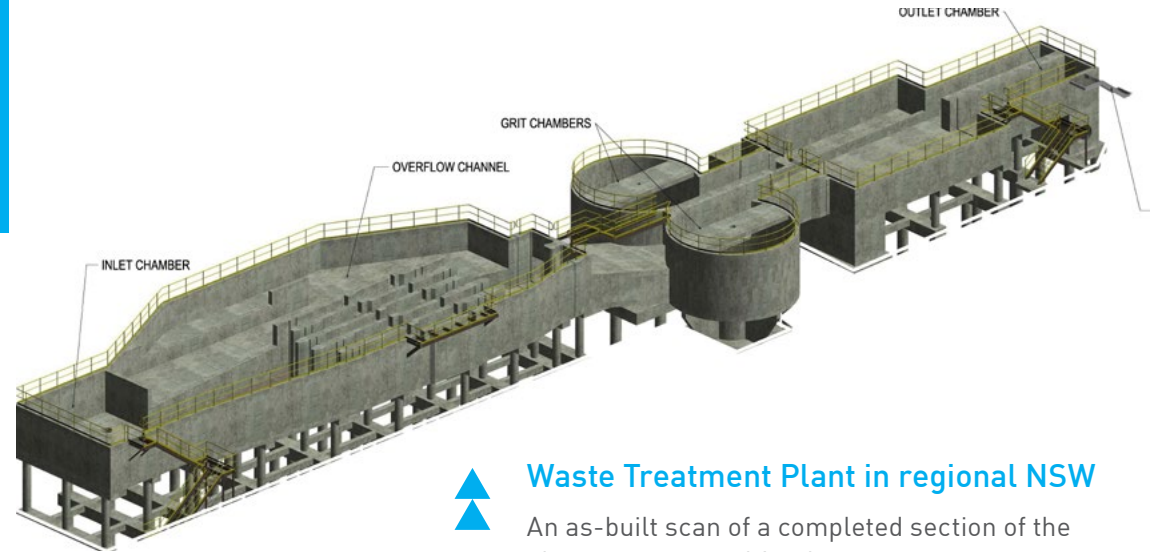
Steel Fabrication

VFT carried out TLS and reports for the conformance & As-Built of the roof structure of Sydney's oldest railway station



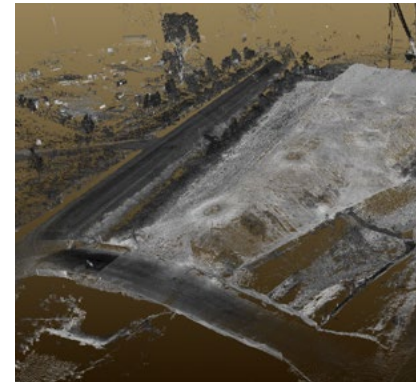
Pacific Highway between Woolgoolga & Ballina NSW

VFT carried out a full Terrestrial Laser Scan of the road carriageway



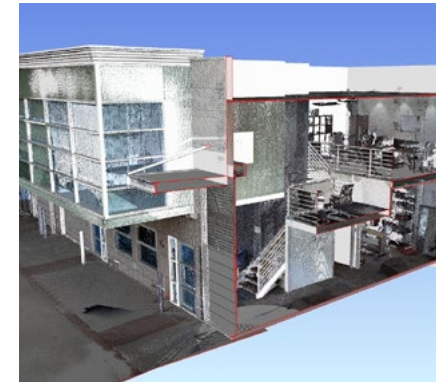
Waste Treatment Plant in regional NSW

An as-built scan of a completed section of the plant was required for documentation



Example Stockpile Model

VFT use TLS & UAV to quickly capture large areas for volume management & reporting



Example REVIT model

VFT produced cross sections, dimension reports & Revit models of this office block

Company References

Martin Bower Survey Manager
Pacific Complete (Woolgoolga to
Ballina W2B)

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Laing O'Rourke (Central Station
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