



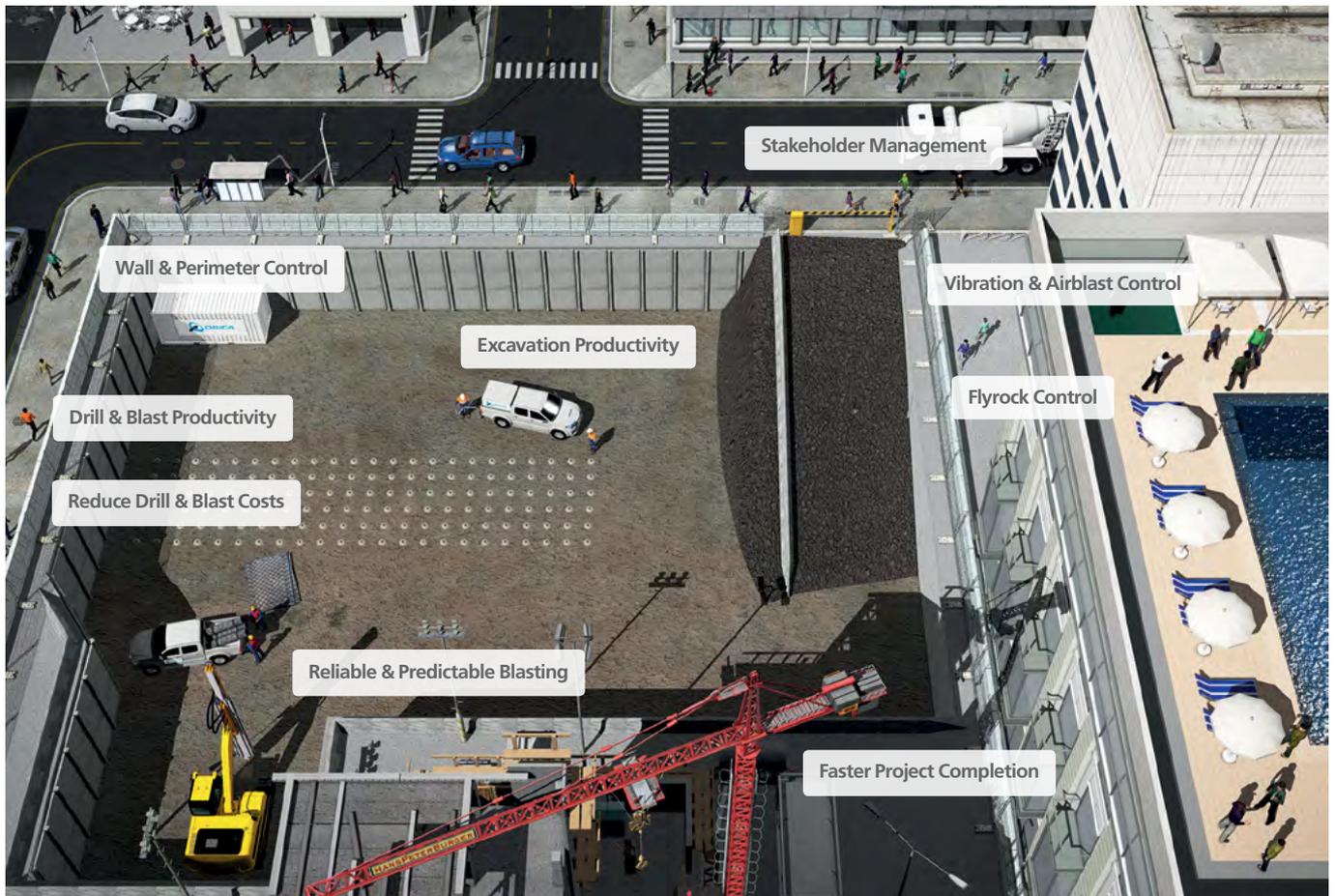
CONSTRUCTION SOLUTIONS

At Orica, we're focused on developing long term partnerships which reduce drilling and blasting costs, improve productivity and enhance your licence to operate. We combine the progressive thinking of our Global R&D and Technical networks to find solutions to the challenges you face every day.

Blasting Systems | Ground Support | Mining Chemicals

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We have a range of services and blasting systems uniquely positioned to deliver results for the construction market.

BLASTING SYSTEMS

Bulk Systems

Orica's Bulk Explosives offer the broadest range of energy in the market, with systems ranging from less than half, to almost triple the Relative Bulk Strength of ANFO. With additional options in Velocity of Detonation, you have greater choice and unprecedented control of blasting outcomes in all rock types.

Electronic Blasting Systems

Our Next Generation of Electronic Blasting Systems harness the latest developments in blasting technology to ensure greater control of energy in the rock mass. uni-tronic™ 600 is the benchmark system for use in construction operations.

Initiating Systems

Orica manufactures and distributes the widest range of conventional electric and non electric detonators, boosters and detonating cord globally. Our Initiating Systems provide the highest level of safety, reliability and ease of use. They're backed up by a global network of manufacturing and assembly plants to ensure reliable supply.

Packaged Explosives

Our extensive range of Packaged Explosives provides outstanding product performance.

With excellent shock and heave energy, Orica's Packaged Explosives are safe, easy to use and reliable.

SERVICES

Orica's service delivery model offers a wide range of options to improve your blast loading productivity and optimise your blasting results.

Our team of engineers, blasting technicians and product support specialists are enabled by a comprehensive range of design, modelling, measurement and survey tools as well as sophisticated delivery systems.

GROUND SUPPORT

Through an extensive Ground Support offer, Orica works with you to overcome the challenges of productivity and safety in a wide range of geological and environmental conditions.

MINING CHEMICALS

Orica is a leading global provider of sodium cyanide for gold extraction and also offers a range of other chemical products for mining.

For further in formation visit orica.com/contact and we will connect you with your regional customer solutions specialists.

CASE STUDY INCREASING PRODUCTIVITY THROUGH RISK MANAGEMENT AND TECHNOLOGY

AIRPORT LINK PROJECT, BRISBANE, QUEENSLAND



Airport Link Project, close proximity to neighbours.

THE SITUATION

During construction of a major traffic tunnel under the city of Brisbane, project leaders Thies John Holland (TJH), sought Orica's advice to excavate 30,000 cubic metres of hard massive volcanic tuff from a critical tunnel portal. The portal was next to a major arterial road, heritage listed buildings, a church and a three story office building. The large areas of rock were too hard for mechanical rock breakers to work efficiently.

The task was complex as it was located in the middle of a busy construction site and a tunnel portal that had to remain open 24 hours a day. Strict vibration limits were imposed on the adjacent concrete soil mix and secant pile retaining walls around the excavation.

To maintain traffic flow on the adjacent main road, blasting could only occur once a week during a 45 minute window, with road closures limited to no more than three minutes. Orica worked with TJH, the Brisbane City Council, police and Main Roads to develop a highly detailed clearance procedure for the area. Managing and reducing the impact on the community and associated works were the major priorities.

SITE PROFILE

At a total cost of \$4.8 billion, Brisbane's Airport Link Project was one of Australia's biggest road infrastructure projects. The 6.7 kilometre underground toll road was the first major motorway to link Brisbane city to the northern suburbs

and airport precinct, allowing motorists to avoid up to 18 sets of traffic lights.

Several conceptual blast designs were modelled using the SHOTPlus™ iPro program to consider the fragmentation and blast induced vibration of each design.

To maintain efficiency while loading hundreds of kilograms of explosives, Orica's Centra™ Gold bulk explosive was selected as the most appropriate product. This high energy, pumped emulsion blend provided the flexibility and energy required to break the hard massive volcanic tuff. In large volumes it was significantly more cost effective and faster to load than packaged explosives.

Conventional blasting methods would have required firing one small blast every afternoon. The daily disruption to operations, public roads, workers and neighbours have been unacceptable to numerous stakeholders.

Orica and TJH worked together to develop a unique method to fire large blasts every four days to reduce the overall number of blast events. The innovative method involved loading blastholes with up to five individual explosive decks with each charge firing separately to control vibration levels.

Blasting in this environment required novel timing techniques to reduce adverse effects on the public and surrounding worksite.

The initiation of large, decked blasts were made possible by using the i-kon™ Electronic Blasting System.

Controlled blasting was the solution on this project, allowing TJH to improve the productivity of its rockbreakers and excavate this critical site while protecting the sensitive nature of the site surrounds.

Earl Alcon, Senior Project Engineer, Thies John Holland

THE RESULTS

Twelve blasts were fired on time with no delays, under the management of an Orica Blast Controller, 12 blast sentries, four traffic controllers and four police officers.

The project was an outstanding example of Orica's capabilities in:

- Managing the risks of using explosives in a large, busy urban construction project;
- Firing large blasts to reduce disruption to other activities on the site and surrounding roads;
- Using 3D computer blast design software to meet precise excavation tolerances; and
- Precise loading of bulk explosives down to one kilogram, to manage vibration cost-effectively.
- All shots were successfully fired and excavated, with vibration and overpressure readings well under the compliance limits.

KEY OUTCOMES

- NO EXCEEDANCE OF VIBRATION LEVELS
- REDUCTION IN NUMBER OF BLAST EVENTS
- DELIVERED ON PRECISE EXCAVATION TOLERANCES

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