Traffic Controllers have long been recognised as having to carry out their duties in a challenging and high-risk environment. A report by the Workplace Rights Ombudsman in 2009 noted they were prone to sun exposure, dehydration, respiratory problems and injuries from projectiles and passing vehicles. The most obvious hazards were being hit by passing traffic and mobile plant and machinery.

In 2014, a coroner’s inquest questioned why Australia still puts people on the road to manage roadworks, when other nations around the world no longer do so. In response, the Queensland Department of Transport and Main Roads (TMR) began a search for solutions to separate Traffic Controllers from potential harm.

Australian manufacturer Arrow Emergency Systems has provided a lightweight and clever solution - the eSTOP, an electronic Single Traffic Operator Portable system.

In this article, Arrow Emergency Systems Managing Director Ken Ea introduces the product which has recently been approved by TMR for use on all state government and commercial worksites and is providing tangible safety improvements for frontline traffic control workers.

The challenge of human behaviour
In December 2014, TMR outsourced the hosting of an Innovation Hub. A number of manufacturers and research organisations were invited to participate. ArrowES weighed in on the search for a simple, cost effective solution that would help to remove Traffic Control workers from the line of fire – the side of the road – and allow them to control traffic from safer vantage points.

The problem is a very human one; it is fundamentally difficult to control human behaviour such as speeding, substance abuse, fatigue and other behavioural factors that impact safe driving and lead to casualties on Australian roads. Despite signage and the boundaries of the law, drivers often fail to slow down at worksites, leading to injuries and deaths.

ArrowES reasoned that rather than trying to change these behaviours, the answer was simply to remove the traffic controllers from harm’s way. And so the eSTOP was conceptualised.

“We wanted to offer a solution that could provide immediate impact,” Ken explains. “Something tangible, with results that can be quantifiable.”

On the road to safer worksites
The initial design for eSTOP was simple, yet showed promise. It incorporated a two-aspect lantern – Red and Green – and a simple remote that was hardwired to control a “stop/go” button. From there, the concept evolved to incorporate more smarts and safety features, whilst adhering to the original scope of simplicity and cost effectiveness.

The three main components of the current eSTOP system include two signal units, each unit hosting an identical three aspect lantern (Red, Yellow, Green). The third component is a set of wireless Hand Remote Control, with a range of up to 400 metres and the option to increase this distance if required. The modular units can be operated either in pairs to control two-way traffic, or as a single unit in instances where there is no clear line of sight (traditional radio communication between 2 traffic controllers, whilst standing in a safe distance/location).

Once the Hand Remote Control is paired to an eSTOP lantern, fail-safe mechanisms prevent two green lanterns to be on at the same time when paired. In addition, the system is encrypted,
to ensure that other devices cannot take control over the system / unauthorised access to control the system.

The eSTOP systems are ergonomically optimised, with a lightweight, three-piece assembly. Designed to meet with OH&S guidelines for lifting by a single operator, it can be transported by existing traffic control vehicles, helping to avoid additional transportation costs.

Each eSTOP system includes an eSTOP lantern, a Hand Remote Control, a battery and tripod legs. The legs can be adjusted to support the unit on uneven surfaces. The height of the legs can also be adjusted to allow for visibility clearance. A battery powers the lanterns for up to 15 hours and the lantern unit has been load tested for wind speeds up to 100km per hour.

**Promising feedback from assessment trials**

Trials of the system were conducted in partnership with Downer and Evolution Traffic Control. These trials demonstrated a 93% reduction in the number of near misses on roadwork sites when comparing eSTOP to the traditional Stop/Slow baton.

The most promising feedback came from the frontline workers themselves. They were impressed and enthusiastic about the benefits.

During the trials, Traffic Controllers no longer had to jump out of the way of motorists. The eSTOP lanterns provide great visibility and could be seen from a long distance, even in poor weather conditions, such as rain or fog. While Traffic Controllers tend to be invisible to motorists, drivers don’t miss the eSTOP lanterns.

Another surprising benefit was the effect that the system can have on morale. When a Traffic Controller is roadside with a Stop/Slow bat, they often suffer confrontation and abuse from irritated motorists. When directed by an eSTOP lantern to stop, motorists just do it. It is also a natural response from motorists when seeing a traffic lantern.

After the trials, Traffic Controllers reported that the system was easy to set up and use. They felt much safer being able to locate themselves off the road and operate the devices from a safe distance.

**The future of safe work sites**

While portable traffic signals such as the eSTOP system do not eliminate the need for accredited Traffic Controllers at a work site, they do provide an effective method for removing workers from the direct line of fire when dealing with motorists roadside, or heavy vehicles in worksites.

In November 2016, eSTOP received approval from the Queensland Department of Transport and Main Roads, meaning it can be used on all Queensland government and commercial worksites.

TMR are invested in road safety. Their vision for the future of safe work sites is that Stop/Slow bats will rarely be used by Traffic Controllers. In January 2017, the Department communicated their intention to make the use of portable traffic systems a requirement on all worksites.

From March 2017 their recommendation will be for portable traffic signals like eSTOP to be used in lieu of Stop/Slow bats, with a view of making this a mandatory requirement by the end of the year.

The eSTOP system is a great solution for any organisation or company putting their workers roadside or at work sites that contain the risks associated with moving vehicles.

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**Arrow Emergency Systems (ArrowES) is an Australian manufacturer and supplier of safety equipment for high-risk traffic control situations and works closely with state and local authorities around Australia, with research and development capabilities and a passion for quality and safety. For more information about eSTOP, or other safety equipment for high-risk traffic control situations, contact Arrow Emergency Systems on +617 38813302 or visit their website : www.arrowes.com.au.**