

Summary of Idea Form

 Lesson Reference No: (To be entered by MP Knowledge Team)

Idea/Lesson Learnt Title:

Please enter a meaningful title for the idea/lesson here:

Proximity Warning Systems – 360 Degree Camera

Project Information

Please rate your idea/lesson using the selectivity criteria and place a tick ✓ in the

Scheme	M1 Junction 19 Improvement
Approximate Scheme Works Value (£M)	£230m (MAB) £128.5m construction.
To help others find the idea in the Knowledge Bank: Which Project Control Framework (PCF) Stage does the idea relate to?	Stage 6
And at what PCF Stage should this idea be considered?	Stage 6
Design or Construction Stage?	Construction
Key words/Key phrases?	H&S visibility and proximity around plant
Evidence Coordinator Name	Katie Henderson
Date of Submission	November 2014

relevant boxes below to indicate the impact it has. ** Refer to Selectivity Criteria on attached sheet

Selectivity Criteria

Rating	Cost saving for Project	Delivery	Journey Reliability	Health & Safety	Reputation/ Diversity & Integration	Sustainability /Environment
Highly Beneficial				X		
Medium Beneficial						
Low Beneficial						
Neutral/No Impact	X	X	X		X	X
Adverse Impact						

Commercial Sensitivity – Please indicate if the idea has commercial sensitivity and therefore does not merit wider visibility by stating yes/no in the attached box:

Yes No (please enter a X in the appropriate box)

Details of Idea/Lesson Learnt

Key issue/executive summary:

What prompted the initiative?

Describe the circumstances that led to the issue

One of the major risks of working around machinery is the lack of visibility the plant operator has to see where a person/object is in relation to the plant if they are located within a blind spot. Blind Spots are defined as a lack of direct line of sight from the vehicle operator's position. These are caused by for example, the size of the vehicle, its bodywork, or side mounted hydraulic arms.

If an operator is unaware a worker has stepped inside the red/danger zone or they are working in a blind spot and they maneuver the machine, there is a real possibility they could hit the person causing serious injury or death.

Short Overview of initiative to solve the issue

How does this initiative work and how was it put into practice?

Why was a different way of doing things seen as necessary/a good idea?

What did you do differently?

Proximity Warning System (PWS) – is a system designed as an aid to vehicle operators, to assist them in identifying if their vehicle is in imminent danger of contacting a pedestrian or an obstacle within their vehicle exclusion zone. Skanska has been trialing a few systems and found the best option to eliminate blind spots is a 360° all round visibility camera system. The purpose of introducing all-round visibility is to assist vehicle operators with the safe movement of the vehicle under their control. The responsibility for visibility prior to and during reversing or maneuvering remains with the operator.

Technical requirement for all-round visibility

1. A 360° degree camera system that interlinks pictures from multiple cameras that can pick up a pedestrian out to a range of at least 7m in all directions. Objects with height should be visible up to a height of 1m over the entirety of the surround view and must not disappear on the boundary between cameras. Cameras must have a wide dynamic range and real time video delivery of 25 frames per second as well as being able to function in normal construction environmental conditions e.g. lighting levels. Alternatively,
2. For piling rigs and crawler cranes, a near 360° pedestrian detection system that covers the operator's blind spot(s) is acceptable, the operator will have a full view of the area not covered by the system. The pedestrian detection system will analyse camera feed(s) and will identify a pedestrian from a range of at least 7m, the operator will be warned of an intrusion. In addition to the warning, the system will record the event with CCTV footage for review later if necessary.

Were there any difficulties

Please state if departures to standards were required and what approvals were sought for those departures. What difficulties did you encounter when requesting departures?

N/A

Justification of Selectivity Matrix Indicators

Please ensure your justification is robust and that the issue has a proven track record. If the idea is new ensure it is reliable.

Provide your reasoning why you have assessed any of the selectivity criteria as highly beneficial:

Health & Safety - HIGH – the ability to see all around a machine before maneuvering could very easily be lifesaving if someone has walked in to the danger zone where they risk being hit or reversed over.

Repeatability: please provide your assessment on whether the idea is a one off for your scheme, or if there is potential for wider cost benefits if used on successive projects.

If able to, please provide an indication of the cost benefits if the idea was used many times.

Please explain how you reached your conclusion and ensure that it is quantifiable.

If able to please predict how many times this idea could be re-used.

This system is now being included as Skanska UK Mandate in accordance with the following programme dates:

- 1 February 2015 – all plant introduced from this date will comply
- 1 May 2015 – all current plant operating on Skanska UK sites will comply
- 1 November 2015 – the rules will be reviewed to potentially take into account new technologies available

The following list is not exclusive, but indicates the type of mobile construction plant that will be installed with the 360 system:

- Hydraulic Excavators, tracked or wheeled >10t
- Telescopic handlers where a side loading arm causes restriction in operator vision
- Articulated Dump Trucks (ADT)
- Tracked Dozers and Graders
- Ride on compaction rollers that are fitted with enclosed cabs
- Wheeled loading shovels
- Piling rigs (not mini rigs)
- Crawler cranes
- Road sweepers

Does this idea have links to any other ideas already on the Knowledge Bank or the HA Toolkits?

If your answer is **yes** please give details of the links.

If your answer is **no**, please say so to show that possible links to other initiatives have been considered.

no

Please provide any supporting evidence: pictures, graphs, figures, documents or other evidence

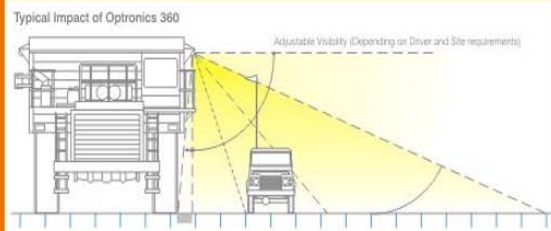
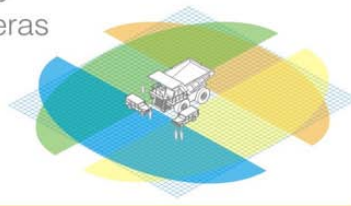
Provide examples that clearly demonstrate the issue, new way of working and how it is making a difference.

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Trial of Balxtair system now complete this has been replaced with an excavator fitted with Spillard Safety "Optronics 360" all round visibility camera system



Optronics 360 - Multiple cameras combine



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Cameras fitted to both sides front and rear



SKANSKA

Cameras fitted to both sides front and rear



Verification Group Decision

Major Projects Knowledge sharing project ground rules and selectivity matrix

1. The idea/lesson learnt must fit with one or more Highways Agency (HA) Strategic Plan goals and measures. These are as follows:
 - Provide a service customers can trust by improving the reliability of journey time.
 - Set the standard for delivery by producing deliverable, affordable and value for money services.
 - Deliver sustainable solutions by reducing carbon emissions from our activities.
 - Deliver the safest roads in the world by reducing deaths and injuries in line with Government targets, including risks for our own on-road workforce.
 - Reducing the cost of improving, maintaining and managing the Strategic Road Network.
 - As part of the strategic vision we must also meet the diverse needs of all our customers with due regard to those with protected characteristics under the Equality Act.
2. The idea/lesson learnt must be transferrable to other projects as follows:
 - Major Improvement
 - Small Improvement
 - Maintenance
 - Technology
 - Managed Motorways (this is the accepted umbrella term for HSR/MM etc)
3. The idea/lesson learnt must be innovative and not standard industry practice.
4. The idea/lesson learnt must meet the selectivity criteria. (See Table below)
5. Ideas/lesson learnt must not refer to or promote proprietary products.

Criteria for selection

Consider

- 1 High or more boxes, irrespective of any neutral/adverse impact.
- More Moderates than neutral/adverse impact.
- Ideas that may have low initial cost value, but could bring greater cost benefits if re-used many times

Discount

- Any combinations of Low and/or neutral and/or adverse impact.

Use the ideas/lessons learnt pro-forma to submit those that meet the criteria as set out above for consideration by the Verification Group. Please provide sufficient detail that the idea/lesson learnt can be applied elsewhere.

Selectivity criteria

Rating	Cost saving for project	Delivery	Journey Reliability	Health and Safety	Reputation/Diversity and Integration	Sustainability/Environment
High	£1M + Saving	Significant savings to agreed schedule of programme and target of 20% efficiencies against budget have been exceeded	Significant Improvement to journey time that exceeds the average of 3 minutes during peak time - Traffic Flow - Accident Frequency - Incident Clear-up Times	Significant improvement where the accident frequency rate target 0.10 has been greatly reduced	Potential National/International Media Interest Advance equality of opportunity	Significant Enhancement (of any 1 with no detriment to rest) - Carbon - Waste - SPAs, SSIs etc - Air - Noise
Medium	£0.1 - £1M Saving	Moderate savings to agreed schedule of programme and target of 20% efficiencies against budget	Moderate Improvement in journey time that meets the average of 3 minutes during peak time - Traffic Flow - Accident Frequency - Incident Clear-up Times	Moderate improvement where the accident frequency rate target 0.10 has been reduced	Regional Media Interest (Government Office Regions) Prevent discrimination	Moderate Enhancement (of any 1 with no detriment to rest) - Carbon - Waste - SPAs, SSIs etc - Air - Noise
Low	< £0.1M Saving	Slight savings to agreed schedule of programme and target of 20% efficiencies against budget	Slight Improvement in journey time that is working towards the average of 3 minutes during peak time - Traffic Flow - Accident Frequency - Incident Clear-up Times	Slight improvement where the project is working towards achieving the accident frequency rate target 0.10	Local Media Interest (Scheme/MAC) Foster good relations	Slight Enhancement (of any 1 with no detriment to rest) - Carbon - Waste - SPAs, SSIs etc - Air - Noise
Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Adverse Impact	Adverse Impact	Adverse Impact	Adverse Impact	Adverse Impact	Adverse Impact	Adverse Impact