PD PORTS

PEDESTRIAN DETECTION SYSTEM (BLAXTAIR) AND THE USE OF DRONES

PSS Presentation – D Jones

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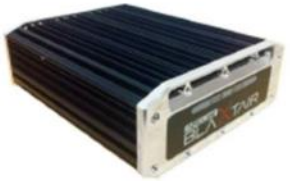
WHAT IS BLAXTAIR?

① **3D image capture:**

The stereoscopic camera monitors and scans a user-defined detection zone

② **Detection:**

Using AI and algorithms, the processing unit analyses the captured images, recognising and localising people in real time



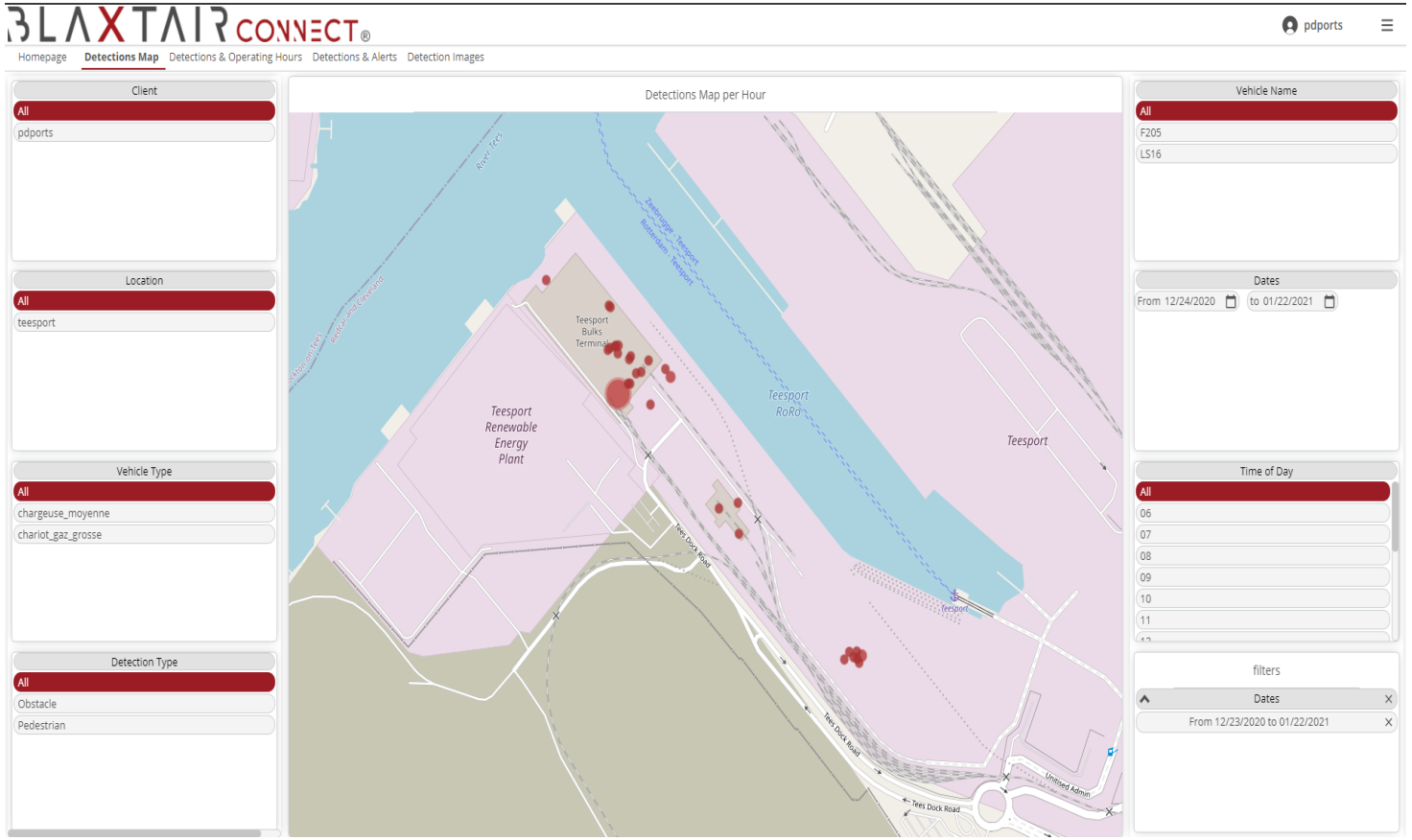
③ **Alert:**

If a person is detected in the defined danger zone, a 7" colour LCD display and/or LED/Buzzer, alerts the driver, giving both a visual and an audible alarm

Passive Pedestrian Detection Warning System give the plant operator a second pair of eyes. The camera only comes on when the driver is in reverse.

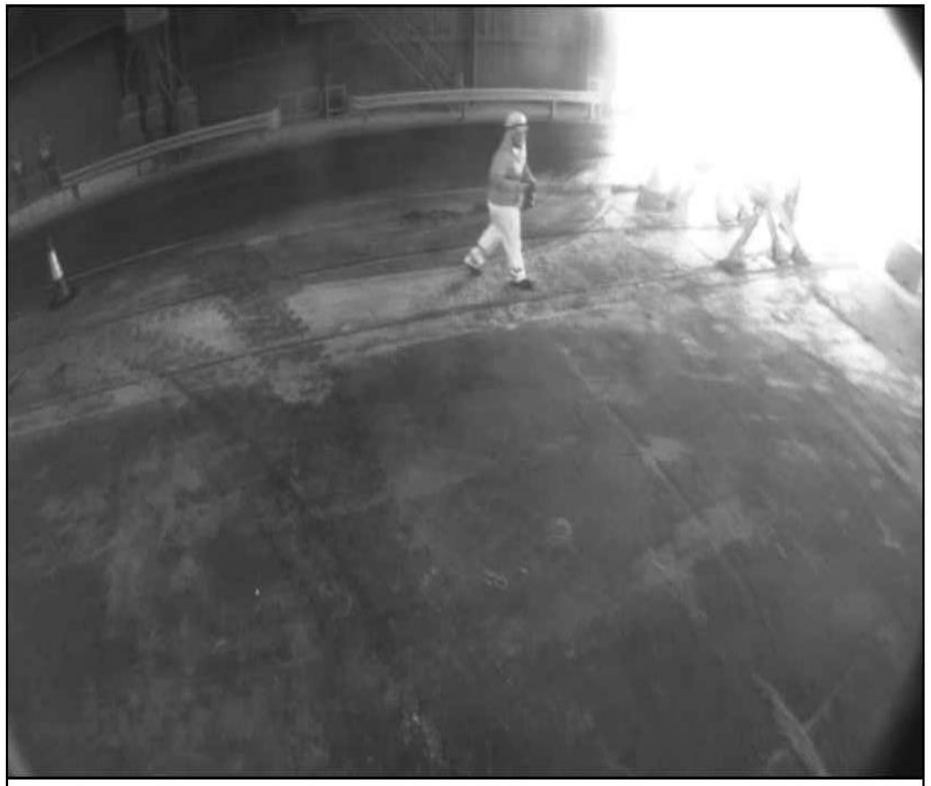
Using 3D camera technology and complex video analysis algorithms, the system can detect the presence of a person against a backdrop of other objects significantly reducing the number of alarms heard by the operator.

BLAXTAIR CONNECT; WHAT IT LOOKS LIKE



The detection map can highlight areas of concern where repeat detections are occurring.

WHAT THE DETECTION IMAGES LOOK LIKE



teesportdepot : 27 November 2022 12:17:11 (UTC0)
chargeuse_moyenne : ls16

teesportdepot : 18 November 2022 19:02:20 (UTC0)
chargeuse_moyenne : ls16

teesport : 14 November 2022 07:22:12 (UTC0)
chargeuse_moyenne2 : ls13

teesportdepot : 30 September 2022 11:30:00 (UTC+1)
chargeuse_moyenne : ls16

HOW DID WE ROLL IT OUT TO STAFF

PD PORTS STRETCH

TBT - Blaxtair System

Introduction:

Engineering have recently installed Blaxtair systems on several assets to improve safety, working conditions and prevent any man/machine interfaces.

What is a Blaxtair System?
Blaxtair is a pedestrian alert system which has an intelligent on-board camera that helps to prevent collisions between Mobile plant and pedestrians.

Two detection zones are set in the Blaxtair system which are obstacles and pedestrians, should an obstacle or pedestrian enter either of the zones the driver would be immediately warned by a sounding and a lighting alarm

Guide for Discussion

The system is not just for Operations to use, engineering can utilise Blaxtair to highlight unsafe practices:

- What is wrong with the below photo?
- What should have happened?

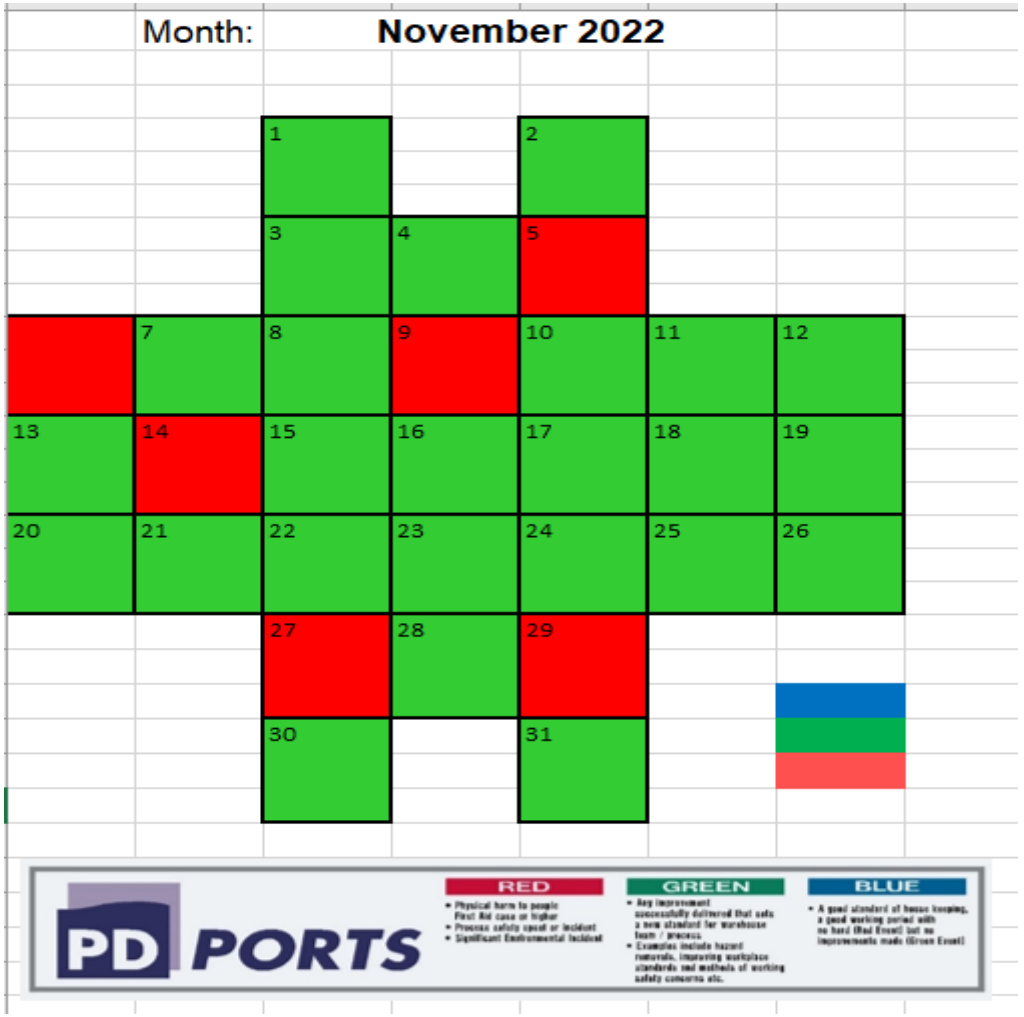
See below for example detection:

PD PORTS STRETCH

Attendee's:

Name (Print)	Date of Birth	Employer (please tick)				Signature
		PD	PSF	DLS	Other	

A Toolbox Talk was put together and rolled out to all staff, to ensure that everybody knew and understood the purpose of Blaxtair. Those who were driving machines with the Blaxtair system fitted were given some training on how it worked.



Several sites chose to incorporate Blaxtair into their daily safety cross meetings, where images of concern were discussed and addressed promptly.

HOW HAS THIS IMPROVED SAFETY AT PD

Blaxtair was introduced by the Health & Safety team and was then driven through the ‘Safety Through Technology’ Group, which began in 2021 after some feedback from our ‘Looking but not seeing’ Campaign led by our Chief Executive Officer and Chief Operating Officer.

To ensure it was implemented successfully, employees were consulted and involved at all levels throughout the implementation, and were asked for feedback on how effective they were finding the cameras whilst they were on trial.

The feedback we received was very positive, which lead to the purchase of Blaxtair Cameras to be fitted onto all relevant machinery (this is pending delivery). With the dashboard comes accountability, and we now have an employee in place checking the images for each site from the Blaxtair cameras, who then distributes a report to the relevant managers each month with any images of concern. This is proving very effective in driving behavioural change with the number of incidents reducing considerably.

Our employees understand from our communication to them, that the cameras are there to keep them safe.

PD PORTS – DRONE IMPLEMENTATION

Background

The rationale for the use of drone technology within PD Ports;

- H&S benefits of the reduction of working at height, over water, busy terminals etc.
- Quality of data increased.
- Multiple data streams collected at the same time (image & thermography).
- Efficiency in the speed of the surveys.
- Given the cost of outsourcing this service and the availability of drone operators we decided to bring this in-house.

Drone implementation update

PD Ports - Commercial Drone Training Programme has been successfully delivered resulting in qualified drone pilots, with specific industry training that fits with their departmental requirements in the following areas;

- Harbour Police.
- Engineering/Projects/Conservancy.
- Health & Safety Team.

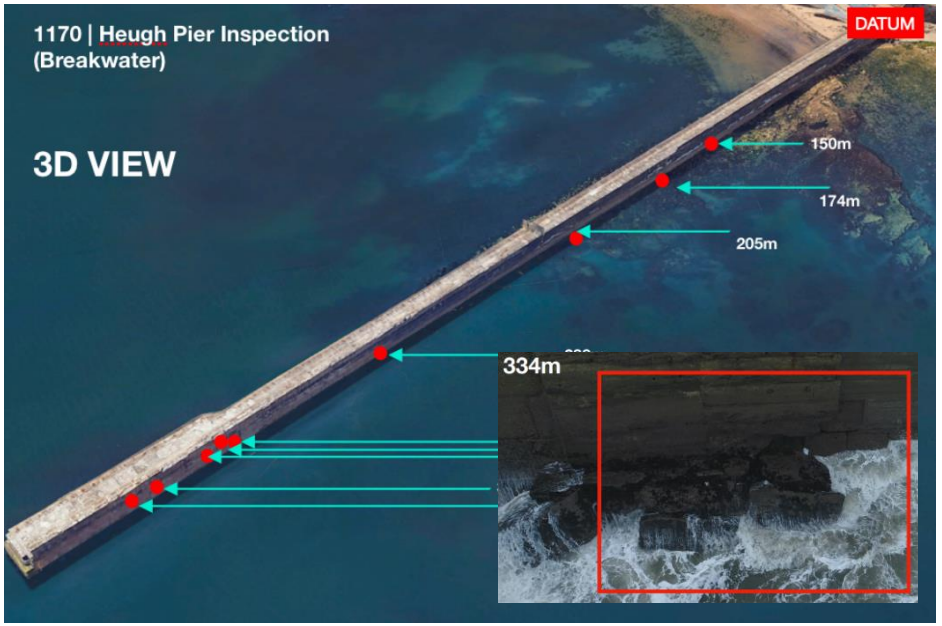
All managed through a central department (Engineering) to ensure consistency in the operation.

We were fully operational by end of September 2021.

Use case 01 – Breakwater Inspection of North Gare

Traditional inspection method of inspecting the breakwaters on foot and via a small boat, not only exposes the inspection team to high risk areas, but also provides limited inspection data due to the physical size & topography of the asset.

Using drones we are able to capture survey images and video files and also convert this into 3D models, that enable us to monitor movement in the armouring providing better data to maintain our assets.

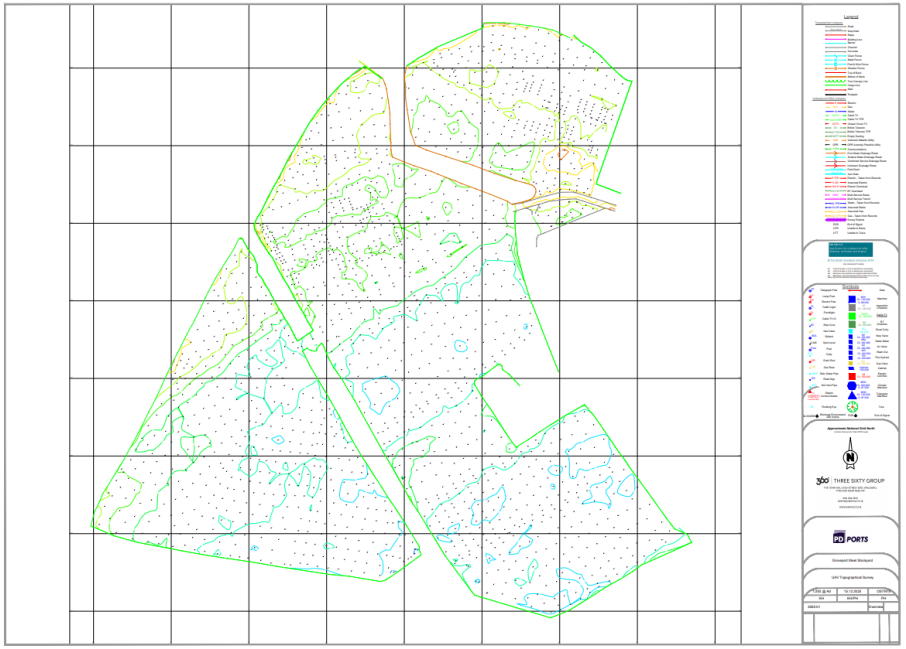


Use case 02 – Steel Stock Yard

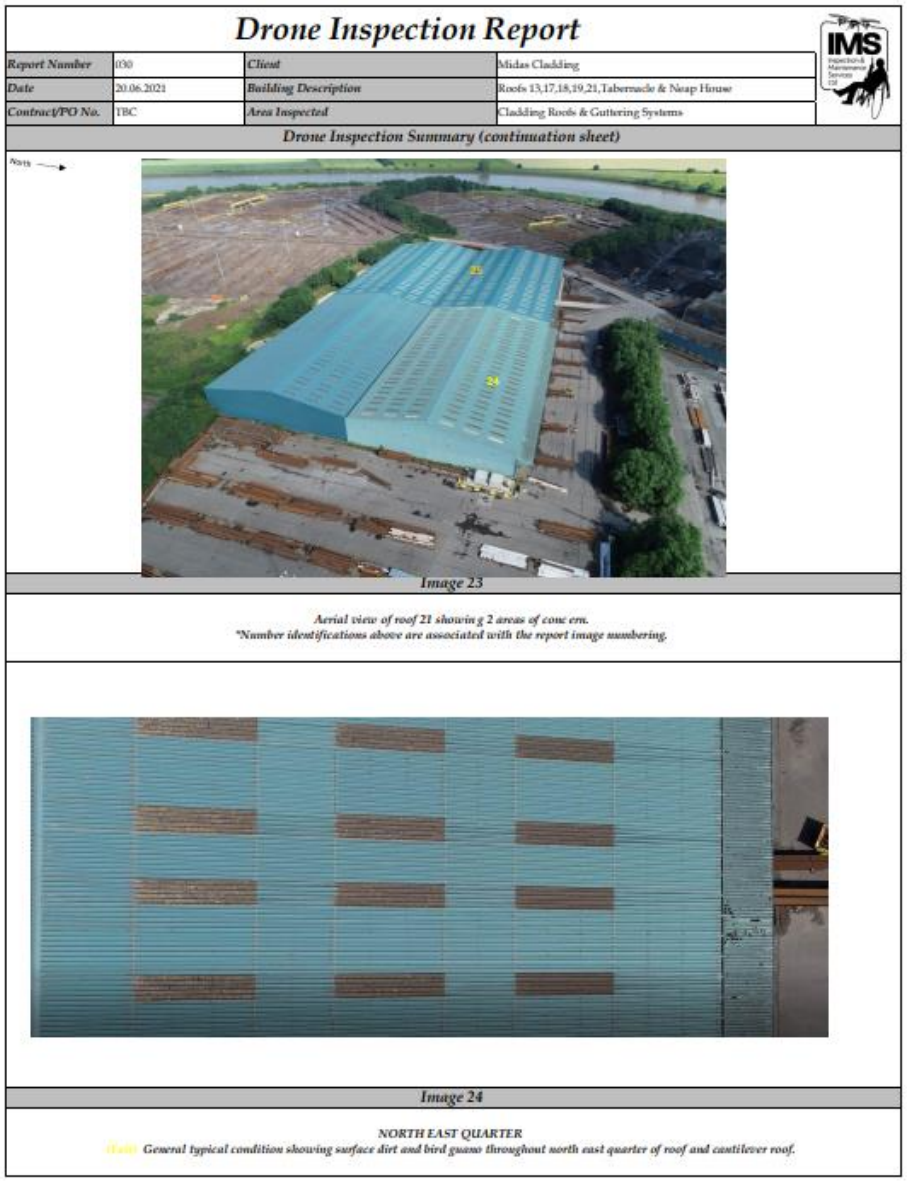
In order to maintain the steel stock yard we are required to regularly grade the unbound surface. Traditionally this requires a level survey carried out by a team on the ground, working around our busy operation to provide the topographical survey that forms the basis of the maintenance plan.

The use of the drone has removed the requirement to survey on foot in the busy operational area, therefore drastically reducing the interface with machinery.

Image to survey



Use case 03 – Warehouse Roof Surveys



Drone Inspection Report

Report Number	030	Client	Midas Cladding
Date	20.06.2021	Building Description	Roofs 13,17,18,19,21,Tabernacle & Neap House
Contract/PO No.	TBC	Area Inspected	Cladding Roofs & Guttering Systems

Drone Inspection Summary (continuation sheet)

Image 23

Aerial view of roof 21 showing 2 areas of conc ern.
*Number identifications above are associated with the report image numbering.

Image 24

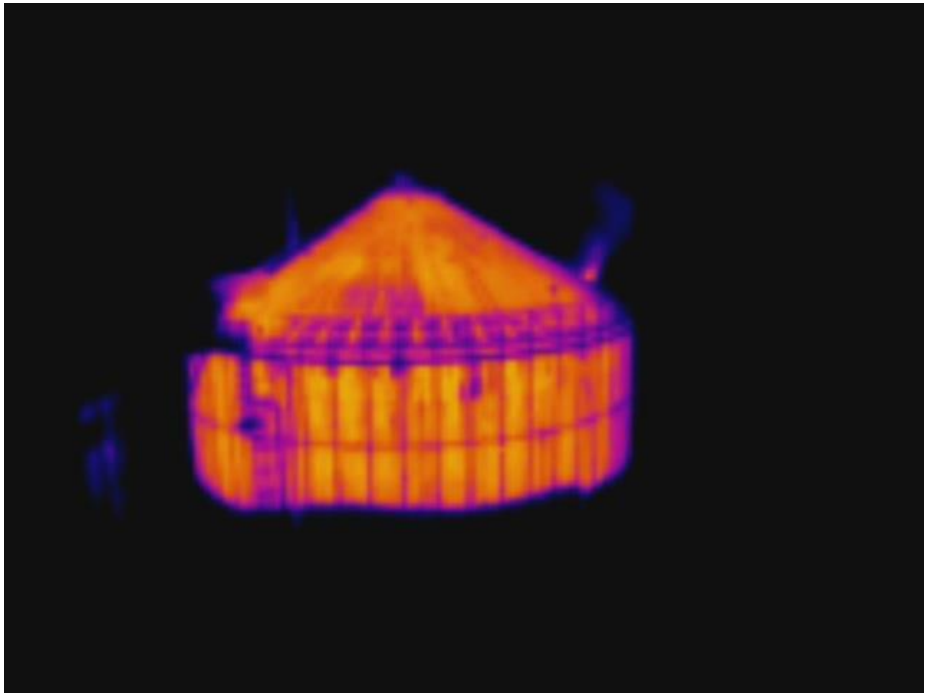
NORTH EAST QUARTER
General typical condition showing surface dirt and bird guano throughout north east quarter of roof and cantilever roof.

In order to determine the scope and priority of the building fabric maintenance, the roof needs to be inspected from a mobile elevated working platform.

The use of drones removes this requirement to inspect from height, and also gives better data that can feed into a more holistic asset management approach for all the building stock, which gives an increased understanding of the condition of the assets.

HEAT SENSOR DETECTION – SILO FIRE

- During a fire in one of our tenants silos we were able to monitor the condition of the silo from within the 100m exclusion zone that had been set by the fire brigade. Using the heat sensors we were also able to monitor the temperatures within the silo and identify the hot spots.
- We have also used this to monitor biomass stacks and other products that are prone to self heating



Proposed Future Development

The training, hardware and partnership with [drone] industry leaders will allow us to continue to grow with this new technology, to ensure that we are able to explore opportunity to improve safety and provide efficiency in our respective areas.

Priorities;

- Development of SharePoint page to manage drone operations.
- Development of the Harbour Police drone operations.
- Development of the terminal surveys & data processing.

Goals;

- Structural inspections - Crane & lighting tower inspections.
- Automated defect identification.
- Riverbank surveys for water/land interface (bathymetric/topographical) data meshed together.

ANY QUESTIONS