



**DRAGADOS**

Working in  
partnership with

**HS2**



# Case Study:

## Hands-Free Communication Trial for Lifting & Construction Operations

**Jason Lohan**

MDJV – Lifting Operations Manager/Appointed Person

**Lee Kelly**

Dragados – Senior Health, Safety & Wellbeing Manager



# Why Change Is Needed

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# Communication Challenges in Lifting Operations



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In lifting operations across construction, handheld radios have long been the primary tool for communication between slingers, lifting supervisors, and plant operators. While reliable, this method now presents practical, efficiency, and safety issues that no longer meet the expectations of today's safety-critical environments.

## Cumbersome and Restrictive Equipment

- Traditional radios are bulky and require at least one hand to operate.
- During critical lifts, this reduces an operator's ability to maintain full control of loads.
- Even lapel microphones require manual adjustment, distracting workers mid-task.
- Radios, clips, and aerials can also snag on PPE or equipment, creating additional risks.

## Workflow Disruption

- Having to stop and handle a radio mid-lift breaks concentration.
- This creates inefficiencies at best, and at worst, increases the likelihood of error at a critical moment.
- Continuous, fluid communication is essential when working with suspended loads.

## Safety Imperative

- **Reduced reaction time:** Handling a radio can delay responses to changing load conditions.
- **Increased pinch-point risk:** One-handed load management raises the chance of injury in confined areas.
- **Distraction from hazards:** Radios divert attention from the working environment, undermining situational awareness.
- **Compromised safety:** Managing a load with one hand while operating a radio with the other risks near misses and accidents.
- **HOSASS incompatibility:** Current radios do not align with the "Hands Off, Step Away, Safe Space" initiative, which promotes reducing direct interaction with loads.



## Hygiene Concerns

- Shared radios and wired earpieces pass between workers across shifts.
- This raises persistent hygiene issues, particularly with high workforce turnover or subcontracted staff.
- In today's health-conscious workplace, this is a barrier to safe, acceptable comms.

## Need for Hands-Free Communication

- Workers must be able to communicate without interrupting their task.
- Hands-free systems allow operatives to:
  - Keep both hands free for load management and signalling.
  - Maintain situational awareness in dynamic, noisy environments.
  - Respond instantly during critical lifts.

## Environmental & PPE Compatibility

- Radios perform poorly in poor weather: wind distortion, rain interference, gloves making operation difficult.
- Modern PPE (helmets, gloves, respiratory protection) is not designed for radio integration.
- Future-ready communication must be seamless with PPE and consistent in all-weather conditions.



## The Case for Change

Faced with these persistent challenges, lifting specialists Lee Kelly (Dragados) and Jason Lohan (MDJV) identified the urgent need for a safer, more effective solution. Partnering with Andy O'Connell of dBD Communications, the trial programme set out to test hands-free communication headsets purpose-built for construction lifting operations.

**The goal:** to create a fully hands-free communication solution that allows operators to focus entirely on lifting tasks - improving both operational efficiency and safety performance.

This shift isn't about replacing a working system - it's about evolving it to meet the higher standards demanded by today's safety culture and operational expectations.



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# Challenges & Areas for Improvement


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
**DRAGADOS**



**WARNING**  
SWITCH ENGINE OFF  
BEFORE REFUELLING

**UNTRAIN**  
**UNAUTHOR**  
PERSONS TO USE THE

 **SUNBELT**

 **SUNBELT**

# Proposed Trail Timeline

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An initial consultation was held on Thursday 28/11/2024 with Jason Lohan, Lee Kelly and Andy O'Connell from dBD Communications who has committed to hitting the brief.

The equipment is being sourced for a potential trial basis on our project for the new year.

Andy would come in and do a familiarisation/Demonstration to the sub-contractors in the use of several items of equipment.

We would propose two 1-week trial's running concurrently due to the small number of trial equipment being available as this is a new concept with Clipfine being asked to conduct the trails as they are our busiest lifting contractors on site.

The trails would be done in stages with all lifting operatives within the respected business's getting to experience the new tech and return feedback in the form of a questionnaire.

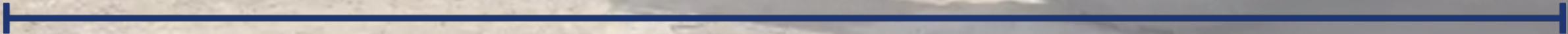
The stages would include a controlled basic lifting operation moving all the way up to a normal day's worth of lifting operations factoring in basic, intermediate & complex lifts, blind lifting in noisy general site conditions.



**CLIPFINE**  
CONSTRUCTION SUPPORT SERVICES



# Trial Design & Objectives



# Trial Design



**Participants:** Frontline operatives (slingers, drivers, site staff) from multiple Clipfine to reflect different roles and environments.

## **Devices trialled:**

- Bone Conducting Headset
- dBD Freedom 2 Headset
- dBD Lighter Headset
- In-Ear Headset
- Remote Mic/Speaker

## **Method:**

Each participant used the device in live site conditions during normal work activities.

A standardised feedback survey was completed for each device, covering:

- Comfort during use
- Clarity of audio
- Ease of operation
- Security of fit during movement
- Management of background noise
- Compatibility with task/environment
- Willingness to use going forward and,
- Open-text comments captured pros, cons, and role-specific observations.

**Duration:** Short-term trials (single or multiple shifts), capturing immediate usability and practical limitations.



# Objectives

## **Assess usability:**

- Is the device comfortable and practical to wear during long shifts?
- Can it be operated easily, even with PPE and gloves?

## **Evaluate communication quality:**

- How clear is the audio in normal and noisy conditions (wind, machinery)?
- How well does it manage background noise and interference?

## **Check safety integration:**

- Does the device improve communication during critical lifts?
- Does it enhance — or hinder — situational awareness?
- Is it compatible with PPE (hard hats, ear defenders, masks)?

## **Test adoption potential:**

- Would operatives choose to use this device going forward?
- Are there role-specific preferences (slingers vs drivers)?
- What barriers to adoption exist (comfort, range, battery life, hygiene)?

## **Identify the best-fit solution(s):**

- Which device(s) offer the right balance of safety, usability, and resilience?
- Which are least likely to be adopted (and why)?
- Where do further adjustments (e.g., range, design tweaks) need to be made?



The logo for Mace, featuring a stylized 'm' with vertical bars in red, yellow, and blue, followed by the word 'mace' in a bold, black, sans-serif font.The logo for Dragados, consisting of the word 'DRAGADOS' in a bold, white, sans-serif font on a dark blue rectangular background.

# Trial Results



# ICOM - Digital Radio

## Standardised Baseline:

All headset trials were conducted using the iCOM digital radio system as the core comms platform to ensure consistency in testing and fair comparison of headsets.

## Features & Strengths:

- Reliable, site-approved digital comms backbone.
- Wide coverage across construction environments.
- Proven durability in demanding conditions.

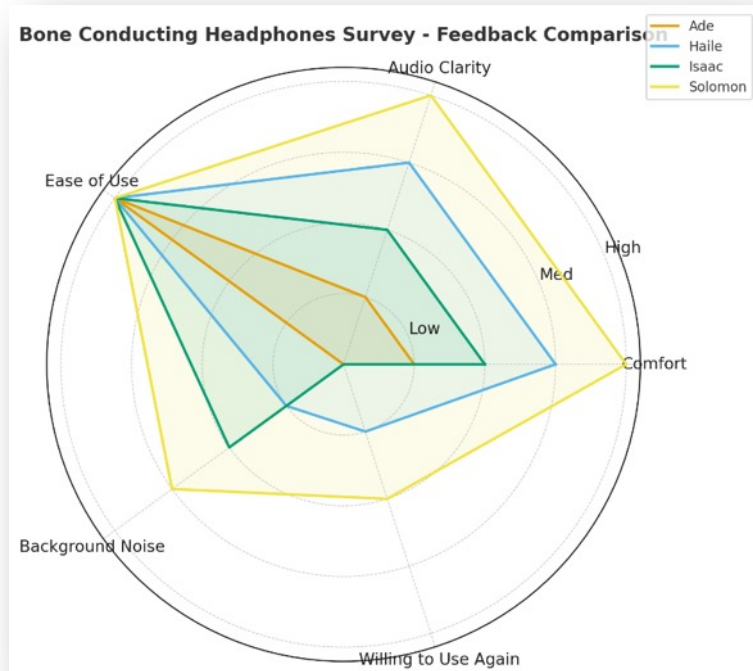
## Limitations (in traditional use):

- Requires handheld operation or lapel mic.
- Bulky, not PPE-integrated.
- Restrictive during critical lifting operations.



# Bone conductor

- **Pros:** Easy to use, stays secure, works well in calm environments.
- **Cons:** Uncomfortable for some, poor clarity in wind, background noise interference, and delays in transmission.
- **Split views on future use:** 2 willing (1 fully, 1 conditionally), 2 not willing.



Respondent	Comfort	Audio Clarity	Ease of Use	Background Noise	Willing to Use Again
Ade Traffic Marshal	Uncomfortable (vibrations)	Not clear/poor overall	Easy	Not mentioned	No
Haile Telehandler Op.	Acceptable	Clear unless windy	Easy	Problem in wind	Yes, if no wind
Isaac Lift Supervisor	Wind issues (implies discomfort)	Poor in wind, transmission delay	Easy	Problem in wind + noise	No
Solomon Telehandler Op.	Good	Clear	Easy	No issue	Yes

# dBd Freedom 2

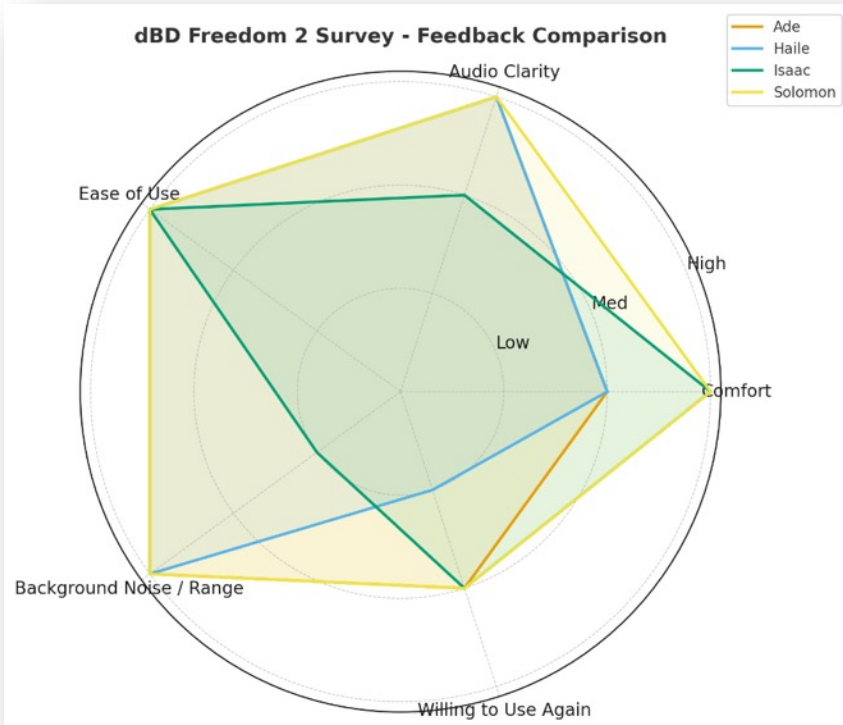


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**Pros:** Comfortable enough, clear audio, easy to operate, generally accepted.

**Cons:** Range limitation (150m), lukewarm acceptance from one user.

**Adoption:** 3/4 happy to use, 1 reluctant.



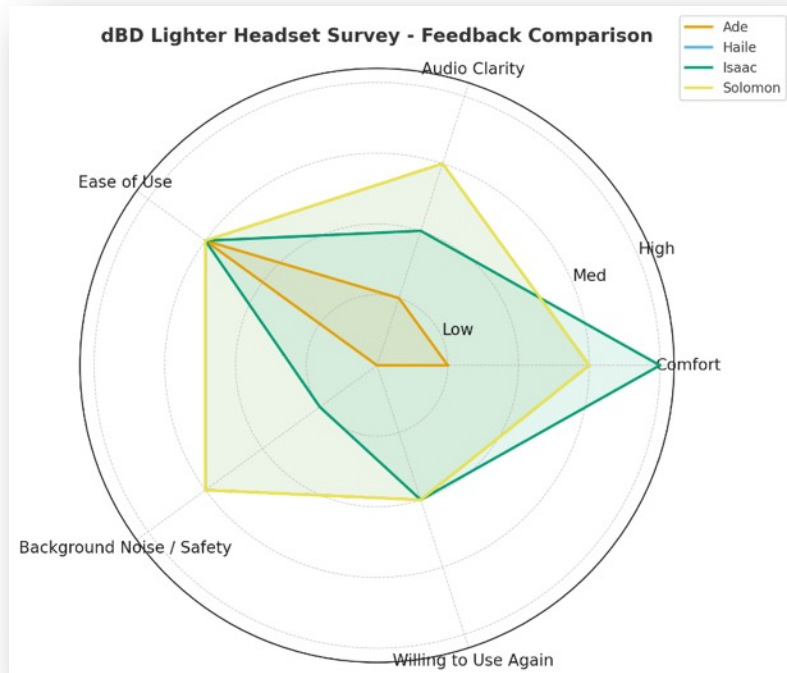
Respondent	Comfort	Audio Clarity	Ease of Use	Background Noise / Range	Willing to Use Again
Ade Traffic Marshal	Okay	Clear	Easy	No issue	Yes
Haile Telehandler Op.	Okay	Clear	Easy	No issue	If no option
Isaac Lift Supervisor	Fairly comfortable	Clear but limited range (150m)	Very Easy	Range limited to 150m	Yes
Solomon Telehandler Op.	Good idea (comfortable enough)	Clear	Easy	No issue	Yes

# dBd Lighter Headset



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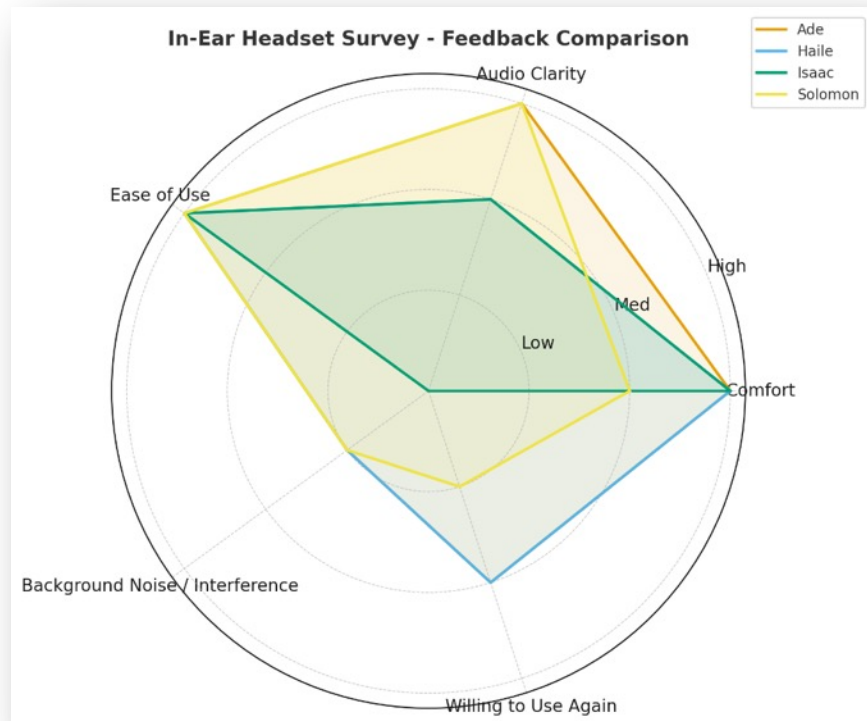
- **Pros:** Comfortable, clear audio, easy to use, generally accepted.
- **Cons:** Range limitation (150m), safety concern around blocked hearing.
- **Adoption:** 3 willing to use, 1 not willing (due to safety).



Respondent	Comfort	Audio Clarity	Ease of Use	Background Noise / Safety	Willing to Use Again
Ade Traffic Marshal	Uncomfortable, ears closed (safety risk)	Not mentioned	Easy	Safety issue - ears closed	No
Haile Telehandler Op.	Good	Clear	Easy	No issue	Yes
Isaac Lift Supervisor	Great device (comfortable)	Clear but limited to 150m	Very Easy	Range limited to 150m	Yes
Solomon Telehandler Op.	Good	Clear	Easy	No issue	Yes

# In Ear Headset

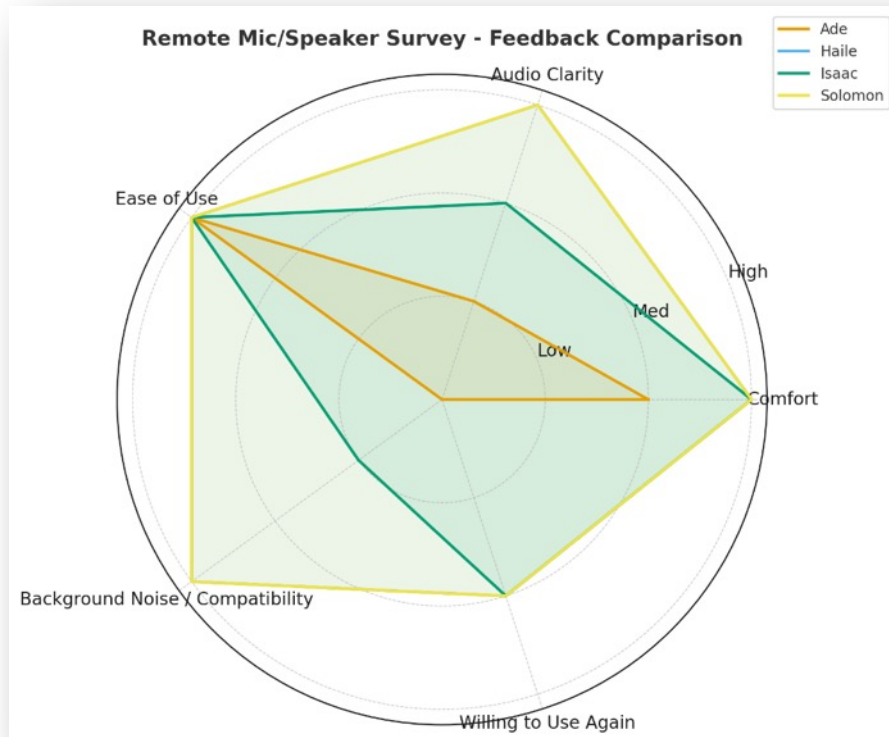
- **Pros:** Comfortable, clear audio, hands-free useful for some roles, easy to use.
- **Cons:** Background noise, interference, uncertain battery life, less useful for drivers.
- **Adoption:** 2 willing, 1 neutral, 1 not willing.



Respondent	Comfort	Audio Clarity	Ease of Use	Background Noise / Interference	Willing to Use Again
Ade Traffic Marshal	Very good, but battery concern	Clear	Easy	Battery life concern	Yes
Haile Telehandler Op.	Good	Clear but background noise	Easy	Background noise issue	Yes
Isaac Lift Supervisor	Comfortable	Clear with interference	Very Easy	Noise + interference	No
Solomon Telehandler Op.	Okay for slingers, less so for drivers	Clear	Easy	Not ideal for driver role	Neutral (don't mind)

# Remote Mic/Speaker

- **Pros:** Comfortable, generally clear audio, easy to operate.
- **Cons:** Noise when used with drivers, compatibility issues across devices.
- **Adoption:** 3 willing to use, 1 not willing.



Respondent	Comfort	Audio Clarity	Ease of Use	Background Noise / Compatibility	Willing to Use Again
Ade Traffic Marshal	Okay, no issues	Noisy with driver comms	Easy	Noise interference	No
Haile Telehandler Op.	Good	Clear	Easy	No issue	Yes
Isaac Lift Supervisor	Comfortable	Clear but device dependent	Very Easy	Compatibility issues	Yes
Solomon Telehandler Op.	Good	Clear	Easy	No issue	Yes

# Comparison

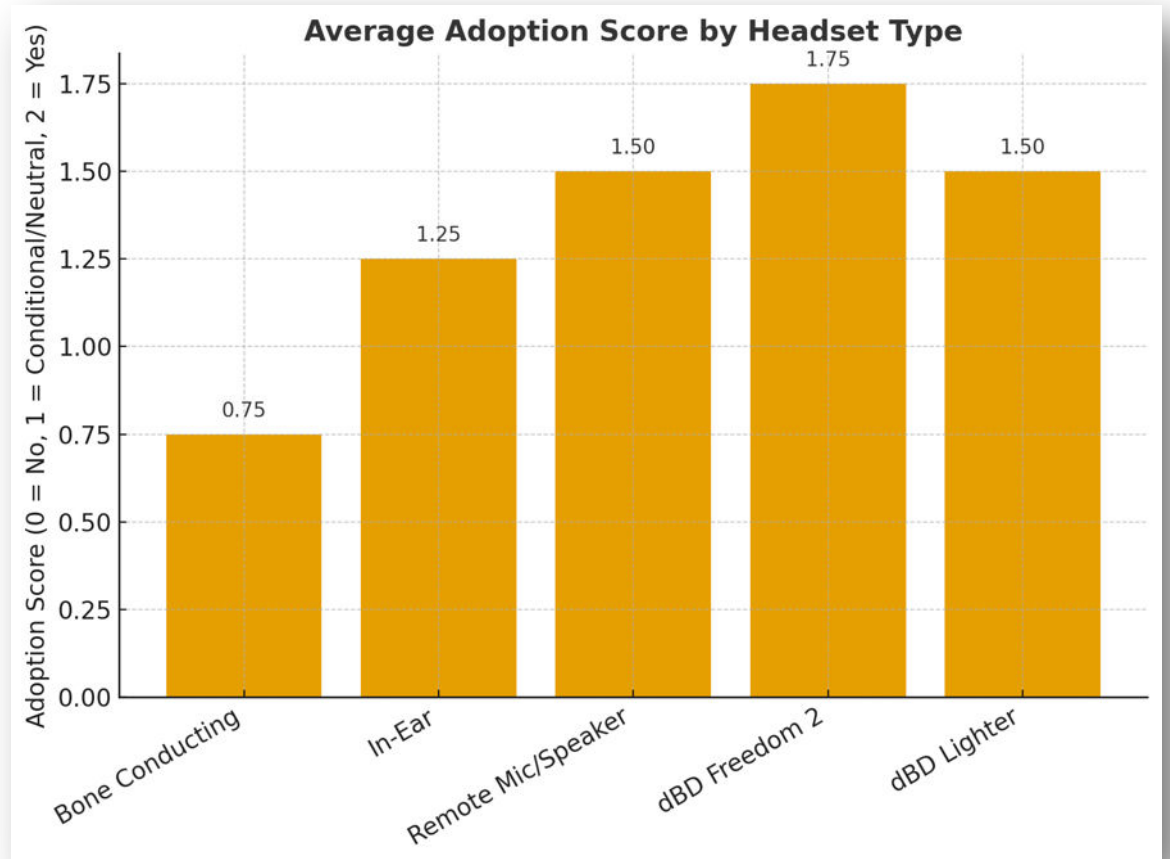
**Bone Conducting:** Lowest adoption (0.75) → major issues with comfort and noise.

**In-Ear:** Mixed (1.25) → battery, interference, and role-specific limitations.

**Remote Mic/Speaker:** Moderate (1.50) → generally accepted but driver noise and compatibility concerns.

**dBD Lighter:** Stronger (1.50) → good comfort/clarity, but safety issue flagged by one user.

**dBD Freedom 2:** Highest adoption (1.75) → clear audio, easy use, only real drawback is range limit.



# Headset Trial Summary



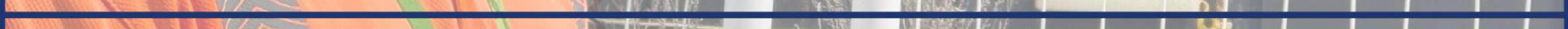
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- **Bone Conducting:** Lowest adoption (0.75) – major issues with comfort and noise
- **In-Ear:** Mixed (1.25) – battery, interference, role-specific limitations
- **Remote Mic/Speaker:** Moderate (1.50) – generally accepted, some compatibility issues
- **dBD Lighter:** Stronger (1.50) – good comfort/clarity, safety concern flagged
- **dBD Freedom 2:** Highest adoption (1.75) – clear audio, easy use, only drawback is range limit





# Next Steps



# Next Steps



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Brainstorm with dBD Communications to co-develop a hybrid headset solution that directly addresses user concerns raised during trials, also Integrates the strongest features of each headset tested. Supports full compliance with Hands Off, Step Away, Safe Space (HOSASS) and enhances both safety performance and operational efficiency in lifting operations.

## Possible Features to Combine

### From Freedom 2:

- Clear audio, ease of use, comfort
- Hands-free duplex comms

### From Lighter Headset:

- Lightweight, comfortable design
- Balance safety with situational awareness (avoid full ear closure)

### From Remote Mic/Speaker:

- Compatibility with existing radios/devices
- Simple, rugged usability in all weather

### From In-Ear:

- Secure fit, battery performance optimisation
- Minimise interference & background noise

### From Bone Conducting:

- Potential for constant wear without obstructing hearing
- Useful in management/emergency comms



# dBD HQ visit



## Collaboration with dBD Communications 01/10/2025

Frontline Leadership Engagement - Lee Kelly, Dragados HSW Manager, and Jason Lohan, MDJV AP Lifting & Plant Manager, visited dBD Communications HQ. The purpose was to share frontline challenges and feedback from the headset trials.



# dBD HQ visit



A joint brainstorming Session was focused on the requirements for wireless communication systems to support lifting operations. The priority is to enable full compliance with the 'Hands Off, Step Away, Safe Space' (HOSASS) protocol.

dBD communications have committed to explore hybrid solutions combining the best features of each trial headset to develop a system that improves safety, usability, and adoption across lifting operations..



# Brainstorm

## Operational & Safety Requirements

- **Radio Training** - Not currently mandatory on most sites but must be compulsory for safety-critical lifting works.
- **Channel Interrupt** - The Appointed Person / Lifting Manager must be able to override or interrupt communication immediately in an emergency.
- **RF (Radio Frequency)** - Device must operate via RF, avoiding delays (even short comms lag is unacceptable).

## Hands-Free & Ergonomics

- **Hands-Free Use** - Essential for compliance with *Hands Off, Step Away, Safe Space* (HOSASS). Slings and banksmen must keep both hands free while controlling loads.
- **Lightweight Equipment** - Must not be heavy or bulky; operatives will reject cumbersome gear.
- **Wireless Radio-to-Ear** - Avoids wires/cables that can snag on chains, slings, or loads.

## Enhanced Features

- **Recordable Conversations** - Enable recording for learning reviews, incident investigations, and continuous improvement.
- **Plant Cab Speaker (Noise-Cancelling)** - Trial feedback confirmed this was the most effective comms method for operators in high-noise environments.
- **Helmet Light Strip Indicator** - A visual signal (helmet strip light) activates when slinger/signaller is communicating, alerting others not to interrupt.



# dBD HQ visit

## Outcome of Engagement

- Agreement of requirements and technology that can be delivered by dBD.
- Identified features that maximise safety, usability, and adoption on site.



# Beyond Lifting: Other Use Cases

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# Other Use Cases



## Traffic Marshals

- Hands-free communication at busy gates and junctions.
- Safer coordination of vehicle movements while giving hand signals.
- Reduces risk of missed instructions in high-traffic environments.
- Reversing - People and Plant interface

## Tunnel & Confined Space Operations

- Continuous real-time communication in low-visibility or noisy conditions.
- Essential for safety-critical environments with limited escape routes.

## Emergency Response

- Fire marshals, first aiders, and incident response teams.
- Faster, clearer coordination during alarms or evacuations.
- Critical when seconds make the difference in life safety.

## General Site Management

- Site managers, supervisors, and engineers.
- Enables multitasking - hands free for inspections, observations, and incident response.
- Improved responsiveness without reliance on handheld radios.

## Other Use Cases

- Crane operators for direct comms with ground staff.
  - Logistics teams for coordinating deliveries and plant movements.
  - Security staff for patrols without interrupting their duties.
-