

A large-scale construction site featuring several tall yellow tower cranes and multiple high-rise apartment buildings under construction. The sky is overcast, and the foreground shows a concrete slab with rebar reinforcement. A semi-transparent green filter is applied to the bottom half of the image.

# Success story



## Monitoring Environmental Impact in Construction

# Intro

**Environmental monitoring in construction is crucial for addressing issues related to noise, dust, and vibrations generated in the construction industry.**

**In the past, measuring these parameters was done manually and infrequently, if at all.**



The primary goal of environmental monitoring in construction is to ensure safe and healthy conditions for workers and residents at the worksites, while also having real-time data to manage complaints and support internal compliance.

Dempsey Wood Civil, a construction company based in New Zealand, operates primarily in the Auckland, Waikato, and Northland regions. They pride themselves on offering a wide range of activities, such as roads, dams, infrastructure, landfills, among others. They have highly skilled professionals and machinery, but above all, they are committed to the environment and the well-being of the neighbors affected by their projects.

# The challenge

## ENVIRONMENTAL IMPACT IN CONSTRUCTION

Dempsey Wood is a family-owned civil construction company that carries out various infrastructure and land development projects in the North Island of New Zealand. Their projects are often large-scale and require the use of heavy machinery at worksites located in busy residential areas. These projects are subject to strict consent limits regarding dust emissions, noise monitoring, and construction vibrations.



### PROJECT DETAILS

#### Client

Dempsey Wood

#### Location

Auckland, New Zealand

#### Sector

Construction

# The solution

## DUST AND NOISE MEASUREMENT TO MITIGATE INCONVENIENCES

Adroit is one of the best Libelium's distributors. They are the kind of companies that push our technology to go beyond.

Sensor data is transferred to the Adroit platform via the Cat-M1 network.

This platform enables visualization of data through graphs, downloading .csv files, and receiving email alerts and notifications.



### SOLUTION DETAILS

#### Vertical

Sustainability

#### Solution

Libelium Smart Environment

#### Parameters

Noise, Dust, Vibrations

#### Connectivity

Cat-M1

# Behind the change

IoT environmental monitoring solution in construction is site-specific and can be customized. It is modular, cost-effective, and scalable. The IoT solution is also portable, so Dempsey Wood can move the hardware to any site of the works to monitor specific areas.

The sensors, tested in the construction industry, monitor environmental parameters such as noise, vibration, and dust. The solution can be powered by AC or solar energy. Furthermore, it is modular, allowing for easy addition of more sensors to measure other parameters such as sediment in runoff water and weather conditions.

The control panel has designed according to the limits set in the project's Resource Consent, providing an overview for staff to know when they might be nearing a threshold.





# Beyond the challenge



## Portable solution

IoT environmental monitoring solution in construction is site-specific and can be customized. It is modular, cost-effective, and scalable. The IoT solution is also portable, so Dempsey Wood can move the hardware to any site of the works to monitor specific areas when air direction changes.



## Actionable data

Dempsey Wood currently has three sites utilizing Adroit's environmental IoT solution. Project Manager comments, "Land development is a significant part of our work. On some days, there are dry land conditions, wind, and moving machinery, so we use methods like water sprayers to control it."



## Mitigation of inconveniences

"We have received complaints from neighbors in the past, but now, thanks to the dust level control, we receive early warnings that enable us to take quick measures, such as irrigating the soil with water to mitigate it. That's how we see the benefits of this technology," he adds.



## Preventing complaints

Dempsey mentions that shortly after the first installation, they received a dust complaint, and the system accurately recorded it, verifying that Dempsey Wood's site was within acceptable limits. This was possible because the noise data collected by the sensors can also generate values such as LAeq and Lmax to represent average and maximum sound levels experienced on-site.

# Beyond the challenge

“*The data is quite comprehensive. It operates 24 hours a day, 7 days a week, so I have confidence that our control methods are in place to mitigate dust, and we can respond to any issues with real data. This is much better than acting blindly and simply claiming that we are not emitting anything when there is no evidence”*

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Walt Kerkmeer  
Dempsey Wood Project Manager



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