



# CASE STUDY:

## 100 TONNE UNDERGROUND RIGGING WINCH

### **Client:**

Australian Certified Winches  
(End User: BHP)

### **Location:**

Australia

### **Services Provided**

- Design
- Drafting
- Certification

### **Situation:**

Lever was approached to design and certify a 100 tonne winch to be used with an underground mine extraction device (MED). The scope of design included the winch drum, support frame, guards, and hydraulic power pack assembly. The winch was also designed to be moving using a forklift or via lifting lugs.

### **Challenge:**

The operation of the winch in an underground mine resulted in design criteria which restricted the size and mass of the unit. The winch and support structure assembly was required to fit through a 2972 x 1950 mm window and be limited to a mass of 12.5 tonne. These limitations required the design team to ensure components maintained the necessary strength to operate under the 100 tonne load while still meeting the strict size and mass criteria.

### **Solution:**

Lever engineers used AutoDesk Inventor to produce a design that satisfied the key criteria and complied with relevant Australian Standards. The team used a combination of hand calculations and finite element analysis (FEA) to ensure the winch drum and supporting structure could withstand the loads applied during operation.

