# HARBUR5T.

**IMPROVING THE EFFICIENCY** OF OPERATIONAL PROCESSES THROUGH A FACILITY RE-DESIGN

HSR is a privately owned company offering marine engineering services based in the port of Cape Town

#### THE PROBLEM

Due to the current material handling activities and flow in the workshop, operational processes are sub-optimal

## **IE TECHNIQUES USED**

#### **Process Mapping**

To analyse and identify deficiencies in the current operational processes

#### Gemba

To gain knowledge about the current operational processes

#### **Systematic Layout Planning**

To assist in generating solution requirements and layout alternatives

#### To compare layout alternatives

**The Analytical Hierarchy Process** 

#### **Adjacency Graph Method**

To evaluate material flow of final solution against initial layout

#### FINDINGS OF PROBLEM ANALYSIS



The workshop was found to be unorganised, materials and equipment were found out of place which reduces productivity in the workshop.

A temporary propeller shaft workstation is occasionally erected in the driveway hindering movement within the workshop

## SOLUTION REQUIREMENTS

Reduced movement of workers and materials

Provision of ideal space for workstations

mproved steel sheet storage & extraction

**Facilitate** permanent propeller shaft workstation

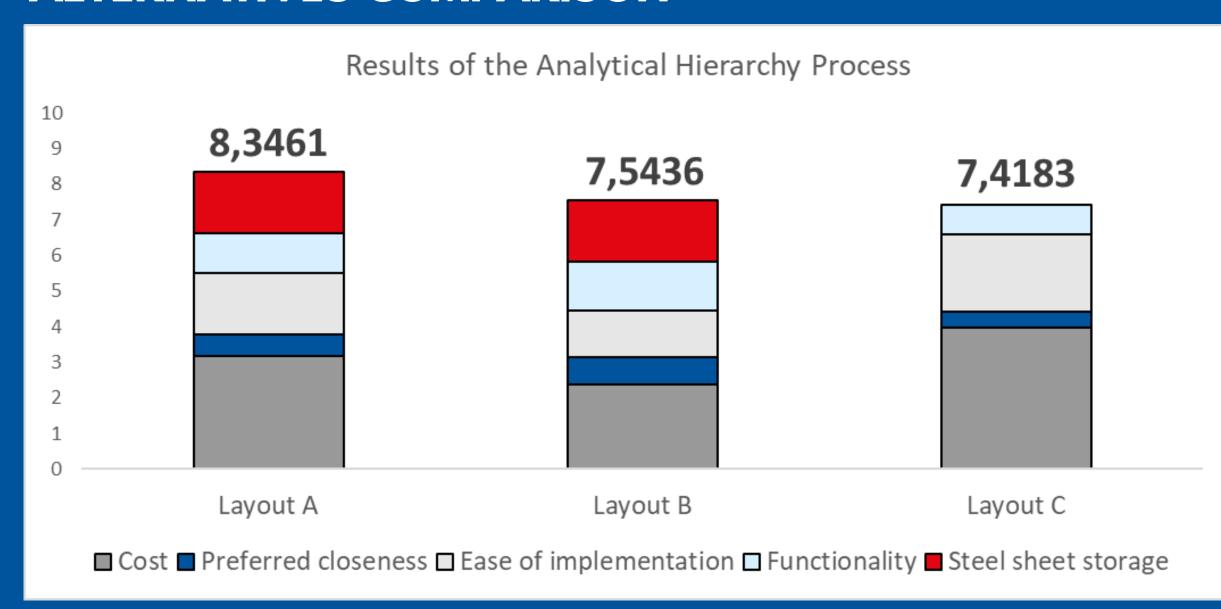
### **PROJECT APPROACH**

Collect data & analyse problem

Define solution requirements

Generate alternative layouts

#### **ALTERNATIVES COMPARISON**



#### SOLUTION

- Rotate steel sheet storage 90° to become parallel with the metal beam
- Re-position cutting area directly under the same metal beam that is responsible for handling the steel sheets
- Reduce cutting area and steel frame storage by 20 m2 each
- Introduce a 20 m2 propeller shaft workstation directly under the central metal beam of the workshop

#### **VALIDATION**

- The adjacency graph method was applied to both the old and new layouts to evaluate their material flow. The new layout obtained an arc score 5 points higher than that of the old layout
- Provision of ideal space for workstations promoting workplace organisation
- Improved steel sheet storage streamlining the steel sheet extraction process
- Permanent propeller shaft workstation promoting ease of movement throughout the workshop

Evaluate and rank alternative layouts

Validate layout against solution requirements

