



UNIVERSITY OF CAPE TOWN

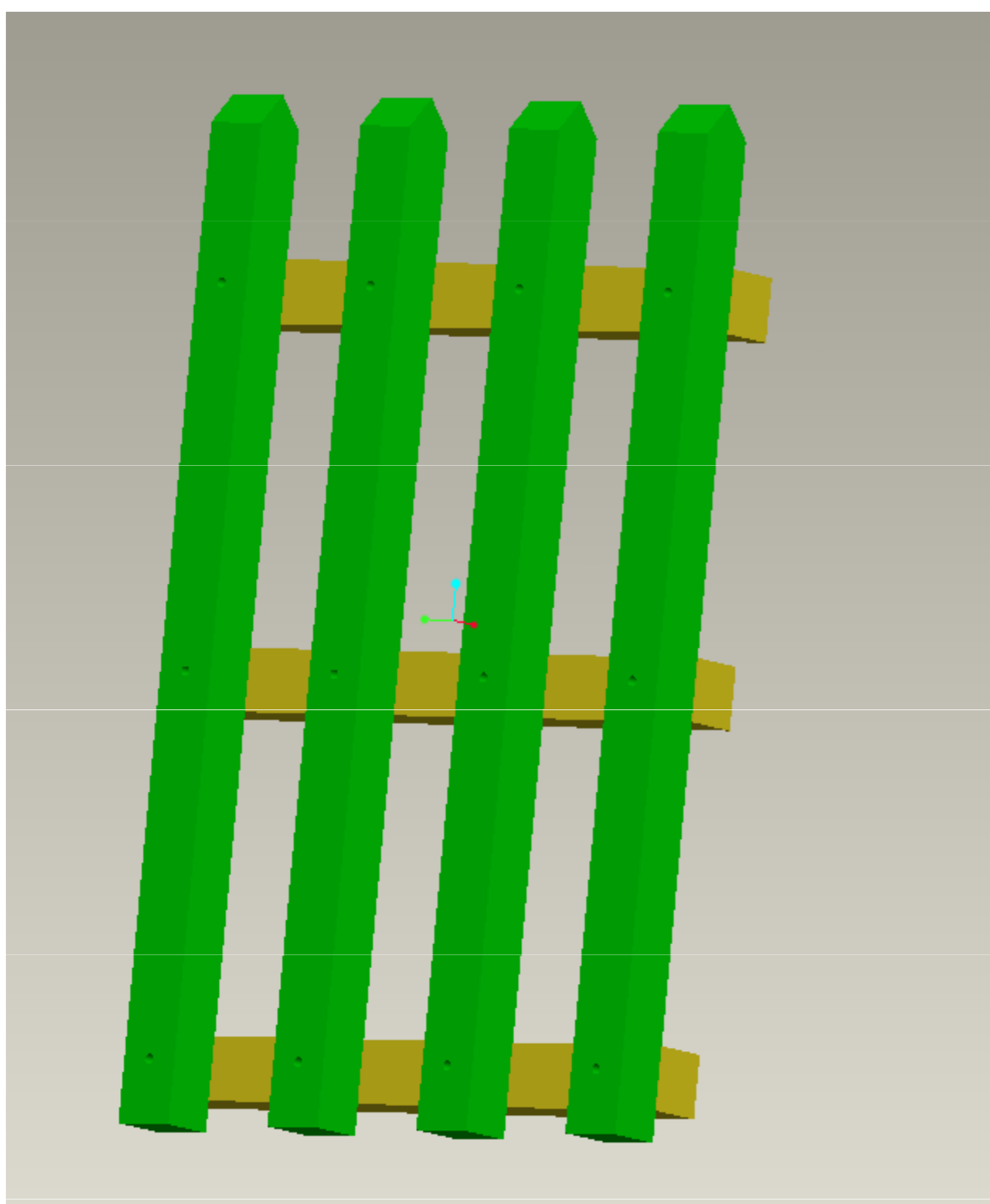
Department of Mechanical Engineering

Title: Low Cost Fencing Material for Pre-School in Low Income Area
Supervisor: Prof. R.D. Knutsen
Student: Konke Mazwai

This project has been proposed by the UCT Knowledge Partnership Project. This institution is aimed at providing assistance to under-privileged communities in the Western Cape. A pre-school fence material which is low cost is to be investigated. The following criteria were set to be met for the material:

1. The material is to have no fuel usage value such as wood, which can be burnt for space heating
2. The material is to have no scrap metal value such as steel and wire fencing material as this easily gets stolen.
3. The material is not to block visibility which harbors criminal activity in the area. Fences such as concrete slabs and brick block visibility.

A 100 x 100 plastic lumber section was chosen to draw this fence below



The materials considered in this project are:

- Various plastic polymer materials
- Plastic Lumber composite material
- Recycled Plastic
- Rubber reinforced concrete

Below is a table showing the tensile strength of the different materials that were investigated

Material Name	Tensile strength (MPa)
PET	19
Recycled PET	0.69
HDPE	20-30
rHDPE	6.5
LDPE	10
rLDPE	7
PP	30-35
rPP	13.6-14.5
PVC	45
rPVC	32.16
PS	35-45
Plastic Lumber	12.7 – 37.7
Rubber Reinforced Concrete (50%)	3.1

Wind Loading Calculations showed the following results on sections of plastic lumber.

