

**UNIVERSITI TEKNOLOGI  
MARA**

**DRAIN CLEANER**

**NIK MUHAMMAD HAIQAL BIN  
NIK MUHAMMAD SHUKRRI**

Dissertation submitted in partial fulfillment  
of the requirements for the degree of  
**Diploma**  
**(Mechanical Engineering)**

**College of Engineering**

**February 2022**

## **ABSTRACT**

Drainage system plays an important role in our daily life. Unfortunately, there are a lot of people that do not care about our drainage system. Because there are no suitable tools for cleaning workers can use to clean the drain, people have to use their bare hands in order to clean the drain to prevent clogged and contribute to causes many problems. For example, flash flood, smelly drain and Aedes breeding. The main objective of this project is to design and fabricate tools that help cleaner to clean the drain easily at the same time to prevent Aedes from breeding. The methodology in this study, the best design of the cleaning tool has been chosen from 5 proposed design sketches. Then the engineering calculation was done with selected dimension and the drain cleaner tool was fabricated for analysis work. The cost is calculated and the fabrication of project are listed step by step. The outcome is expected to be a handful tools and helpful for the cleaner.

## **ACKNOWLEDGEMENT**

Firstly, I wish to thank God for giving me the opportunity to embark on my diploma and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Ir Ts Haszeme Bin Abu Kasim.

Finally, this dissertation is dedicated to my father and mother for the vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulillah.

# TABLE OF CONTENTS

	<b>Page</b>
<b>CONFIRMATION BY SUPERVISOR</b>	<b>ii</b>
<b>AUTHOR'S DECLARATION</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ACKNOWLEDGEMENT</b>	<b>v</b>
<b>TABLE OF CONTENTS</b>	<b>vi</b>
<b>LIST OF TABLES</b>	<b>ix</b>
<b>LIST OF FIGURES</b>	<b>x</b>
<b>LIST OF ABBREVIATIONS</b>	<b>xiii</b>
<b>CHAPTER ONE : INTRODUCTION</b>	<b>1</b>
1.1 Background of Study	1
1.2 Problem Statement	1
1.3 Objectives	2
1.4 Scope of Work	2
1.5 Significance of Study	3
<b>CHAPTER TWO : LITERATURE REVIEW</b>	<b>4</b>
2.1 Market Analysis	4
2.1.1 Target market and estimation of market size	
2.1.2 Customers need and identification	
2.2 Information on existing products, patents, standards	10
2.3 Product design specifications based on literature review	12

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of Study

The results of the study and reviewing from a survey on the internet, majority of the cleaning workers agreed that there aren't any suitable tools for cleaning the drain with a huge amount of garbage [1]. There is only the small-size drain cleaner that can only be used to remove small garbage. This product called "Drainclean" will help the cleaners to clean all the garbage and unwanted things in the drain easily. The Drainclean is built with a mechanical application such as a rotating wheel, rotating brush/broom, and adjustable handle. The studies of dynamic and static have been done in the making of this project.

### 1.2 Problem Statement

As we know, Malaysia has numerous drainage systems construct along with the city and country. The drain system is very important to make sure all the excess water can flow to the right path to avoid a flood from happening [6]. But there is a problem with our drain systems that have been listed. Firstly, the drain system is loaded with the garbage that will make the drain clogged [4]. When this happened, the area with a clogged drain will be hit by a flash flood when there is heavy rain that occurs [6]. Secondly, when the drain is clogged and the water will be stagnating. The breeding of Aedes will increase same goes for the cases of dengue [19]. Lastly, the process of cleaning the drain also is not effective because the existing product is only cleaned a small amount of garbage. Cleaners need to use a broom and dustpan to clean the bigger garbage and dust. It is not convenient because sometimes they cannot clean all the garbage due to lack of proper tools and they need to collect all of the garbage using hand [8].