Introduction

The purpose of this report is to present the Body group’s findings to the client, Kaia Nightingale. Ms. Nightingale’s request was for a design for an electrically-assisted recumbent fully enclosed tricycle, herein referred to as the Vehicle. The Body group’s findings are in the aspects of the Size and Shape of the outer shell, the Materials of the outer shell, the Frame of the Vehicle, the Interior design, and the vehicle’s Locking Mechanism in sections 3.1, 3.2, 3.2, 3.4, 3.5, respectively. In the following sections the group’s findings will be detailed and explained with design recommendations.

Background Information

Ms. Nightingale’s request for an electrically-assisted vehicle is to fill a vacuum in the market for more economically and environmentally friendly vehicles. She has requested a vehicle that can be used on city streets, preferably small enough to occupy bike lanes incorporated in roadway right of ways. Along with size she has also requested that the vehicle be inexpensive and be operable without insurance. To meet the no-insurance-required criterion the Vehicle will have to have speed limitations and so be allowed to travel in bike lanes or shoulders of roadways where delineated bike lanes do not exist. Pollution of the environment has become a major concern as more vehicles enter into service the more pollution they create. The introduction of electric vehicles can offset some of the pollution released by conventional combustion engines. The Vehicle will be electrically-assisted and therefore no greenhouse gas emissions will be added to the environment from use of the Vehicle. An additional benefit of the electrically-assisted vehicle is the ability to commute long distances. The electric assist can increase the output of power from pedaling the vehicle so longer distances can be reached. The Vehicle will be fully enclosed so commuting to work during the winter months will be similar to that of driving a conventional road vehicle. As the Vehicle will be mostly powered by the driver’s pedaling exercise for the driver will be a constant and daily routine. The benefits of daily exercise will be the alleviation of stress from the workplace and a healthier commuter who may or may not have exercised at all.

Conclusion

The dimensions of the Vehicle will be 2.40m long by 0.85m wide, and 1.2m tall which makes the Vehicle small enough for a bike lane. The material selected will be glass-fibre reinforced polymer which is strong enough and light enough to be durable for all-season driving and resistant to road collisions. The frame of the Vehicle will have the wheels located at a 1.2m width to allow for the best balance and traction and the seat in relation to those wheels will be 0.84m from the rear wheel, which will maximize power output by the user. The interior will arranged so that the comfort of the driver is maintained and adjustable so that comfort can be had by all sizes of potential users. The locking mechanisms of the Vehicle will be such that a light-weight car lock can be integrated into the Vehicle.