



ASSIGNMENT COVER SHEET (INDIVIDUAL ASSIGNMENT)

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Target Market

The target market will be families with children, being able to sit 6 adults this design allows for a while family plus two wheelchair spaces , which allows for full families to sit at the table and socialise and/or eat.

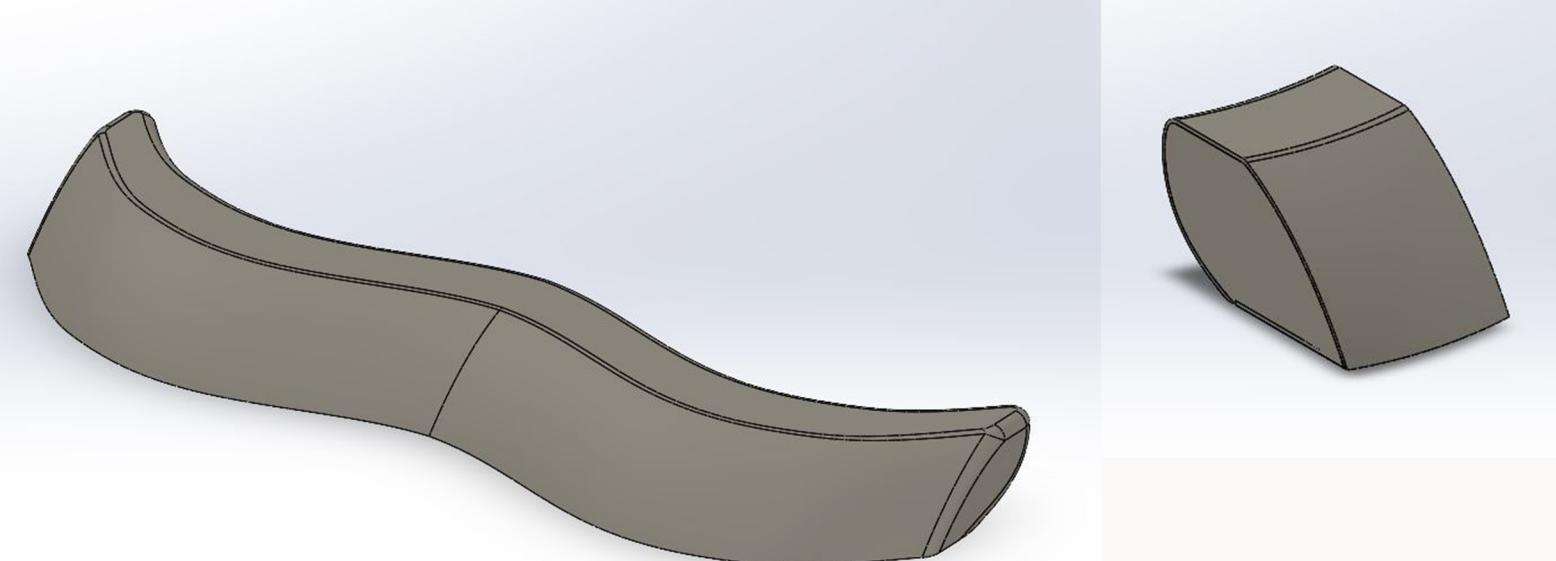
Wheelchair Spaces

The table is designed to have spaces for wheelchairs to be placed.



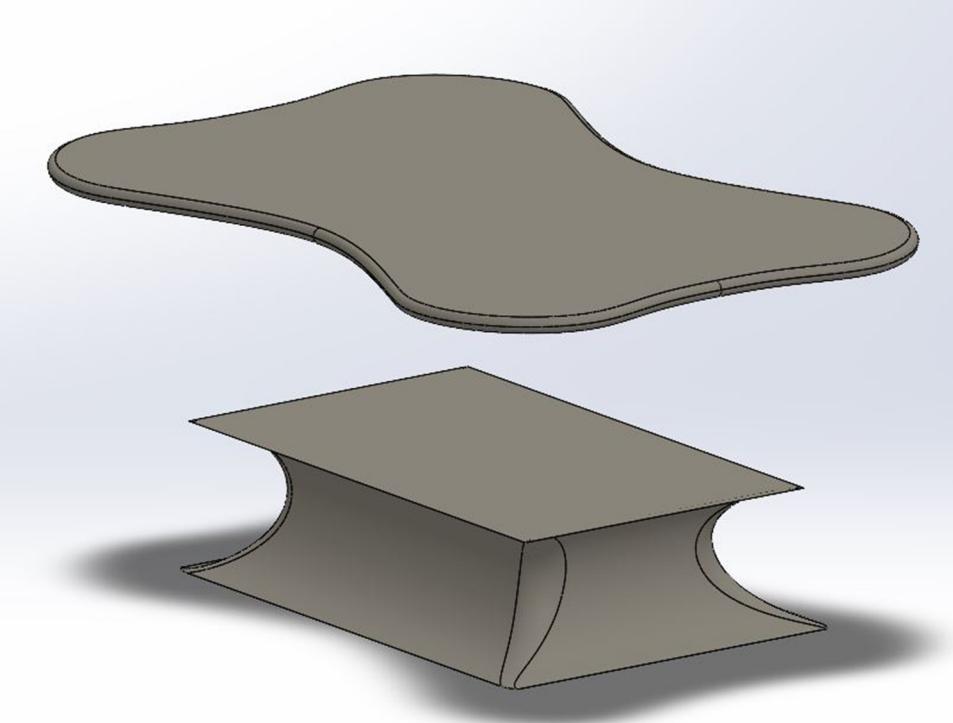
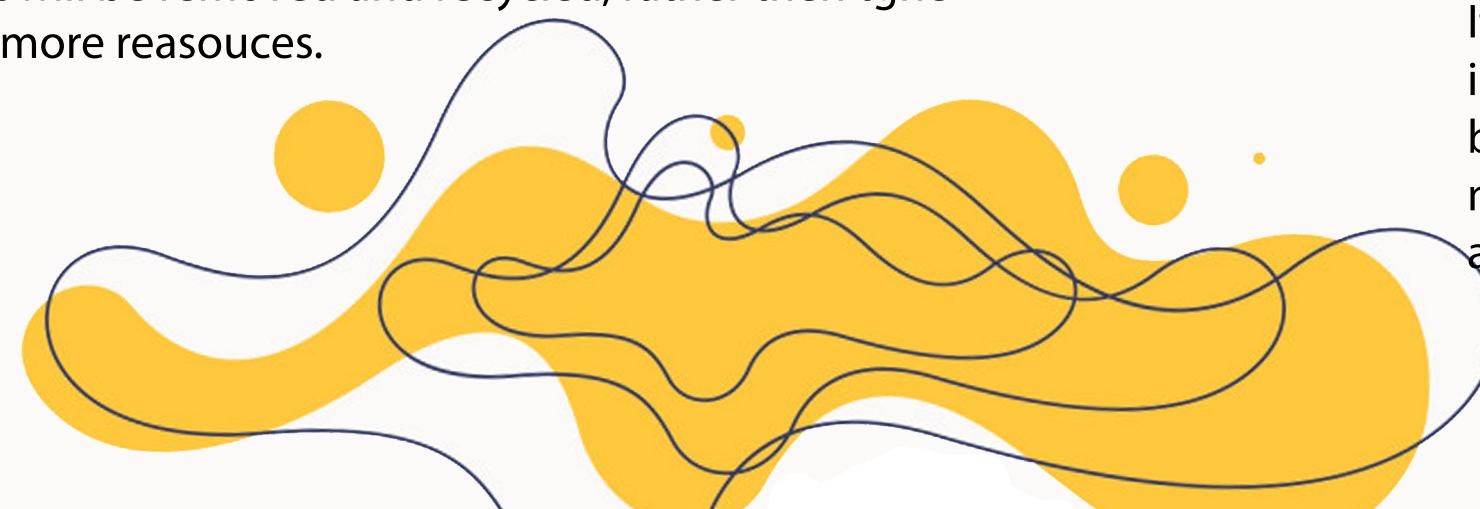
Sitting Position

The seat is designed to be organic and comfortable.



Reduction in Resources

At the end of life the product is likely to become damaged, therefore it is designed to come apart to allow for easy replacement. This means that if a seat is damaged a small component will be removed and recycled, rather than the entire seat, which would use more resources.

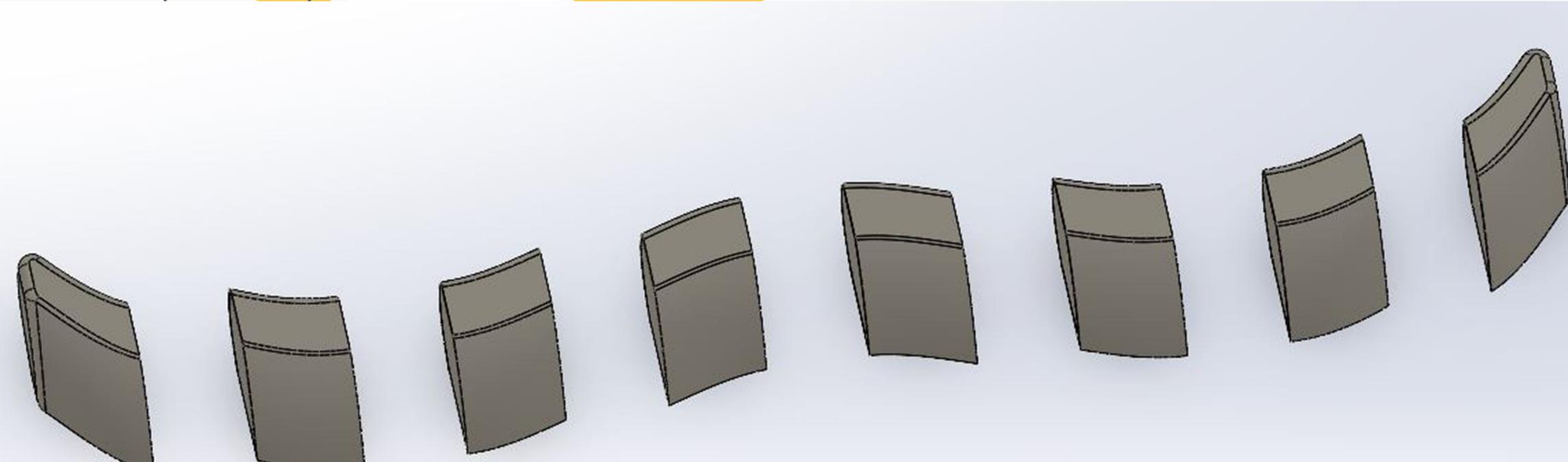


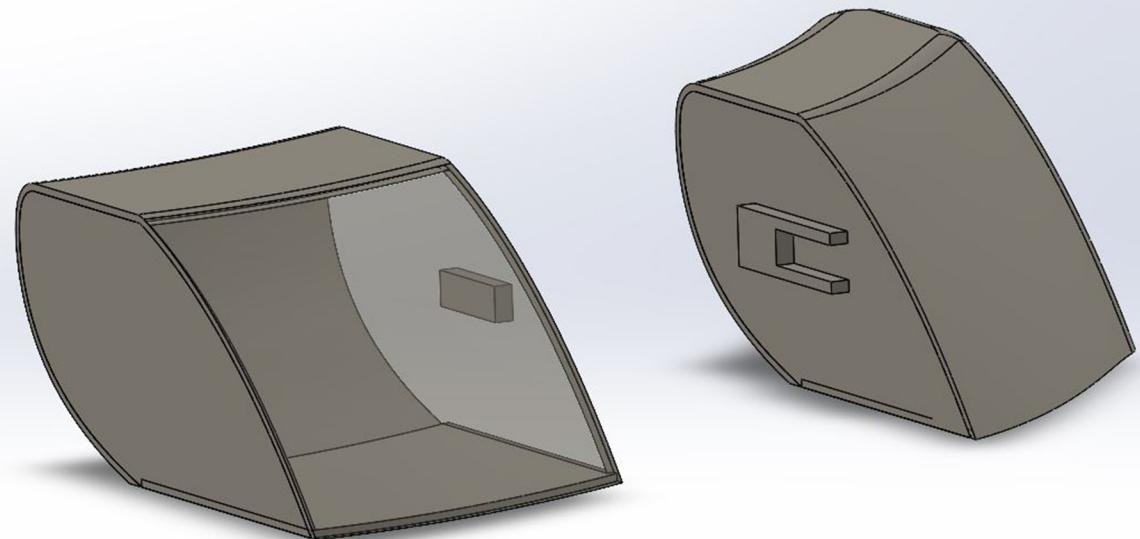
Repurpose

If the top of the table would become damaged, which is the most likely component to be damaged, the base itself can be used as a smaller table, or the top may be replaced. Held together with simple bolts accessed through the bottom of the base.

Recycle

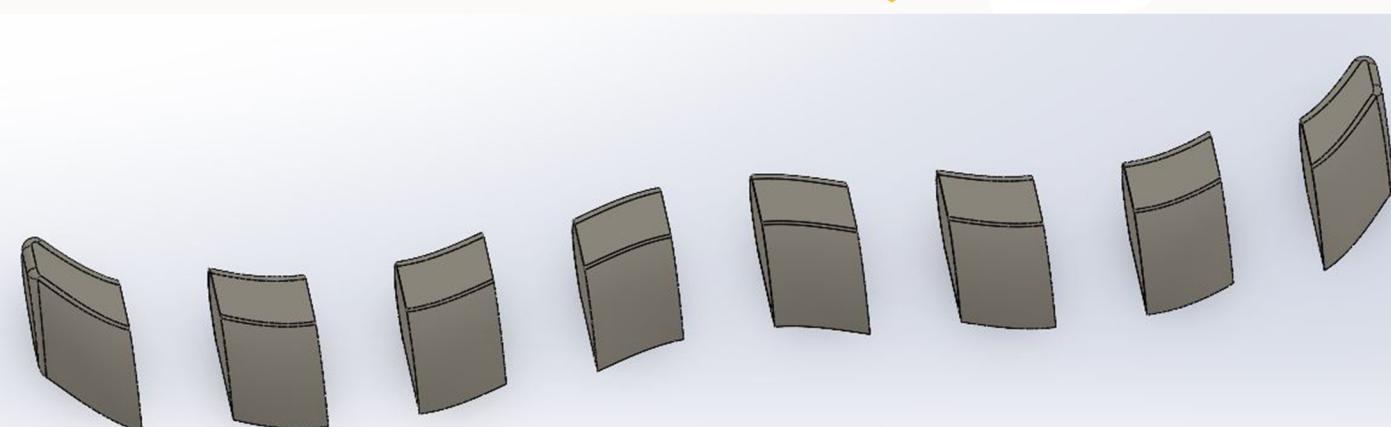
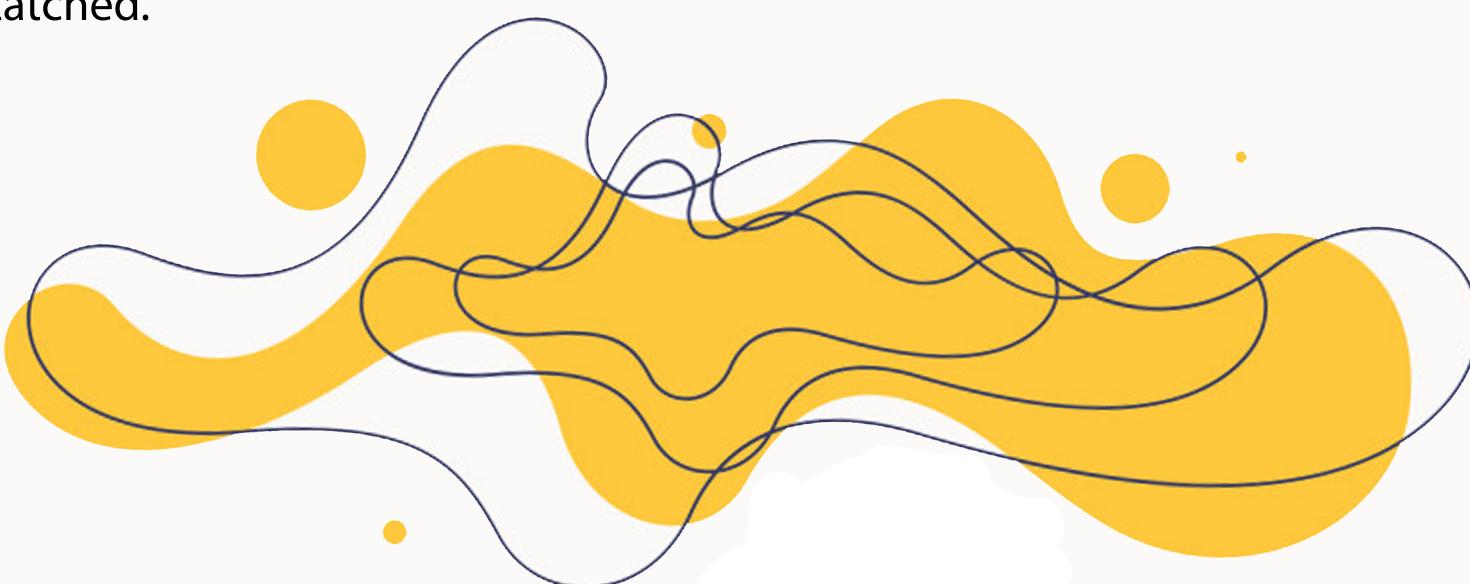
When parts are needed to be replaced the material can be recycled and re-purposed.





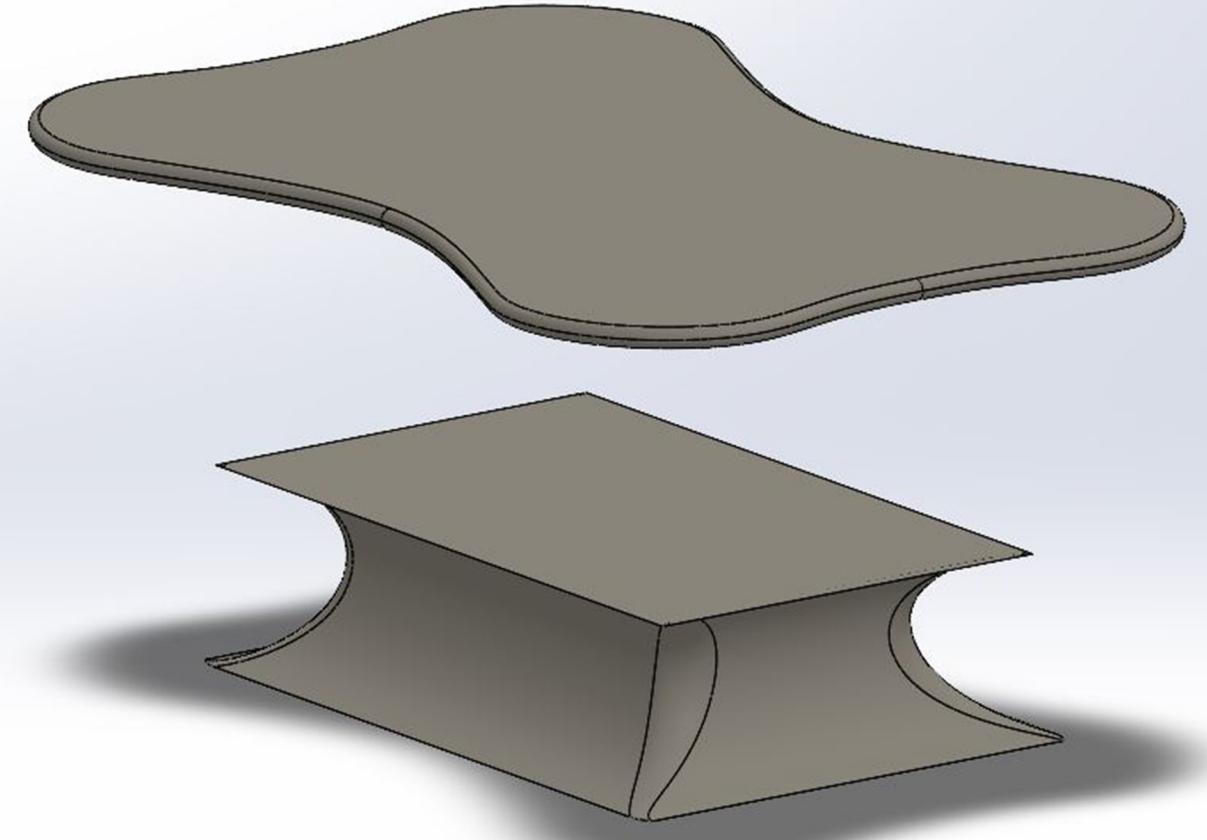
Refurbish

Following damage the individual components can be replaced. Each making use of either Bolts or plastic clips, as featured above, which will be separately manufactured and attached.



Repair

Due to the nature of the material repair may be difficult, however minor blemishes may be sanded out. Only major damage may result in a piece being replaced.



Material Usage

The use of replaceable components uses more material, however due to the rough nature of the environment the product is likely to be damaged, therefore it works out less impactful to replace small pieces rather than the whole piece.

Municipal Changes

Workers should be employed to repair and maintain the product, additionally the replacement of parts will require transport and re-fitting, municipal changes include increasing the workforce to cater for these factors.



Community Actions Natural Ecosystems

The less damage done to the product the lower the environmental impact, due to pieces being replaced and recycled. Additionally the two wheelchair spaces must be utilised by the community to be effective and called a success.

The whole of the product can be recycled, additionally the ability to repair and replace pieces lowers the amount of waste created.



Water Table
Poster 4
Blake Reed

22030016

Water Table

Blake Reed 22030016

I have designed a table and chair set for this assignment. As a group it has been decided that our park should follow an ocean theme, therefore I have designed by product with inspiration from the shapes of waves.

This product is not only designed with the circular economy in mind, but with the addition of social gatherings and communities togetherness. As my design features seating for 6 adults, with 2 additional spaces for wheelchair-bound persons, my design allows for a large group of people with different needs to gather in one spot and socialise, adding an important role within the local community structure.

Repurposing and recycling strategy to reduce resource use

Every piece of my design will be made from recycled material. The seats and table supports will be made from LLDPE, these pieces will be rotationally moulded as they need to be made new to fit the design. The table top will be made from injection moulded HDPE, due to the nature of the product the table top is the most likely piece to be damaged, therefore a more durable material is utilised.

As each piece of the design will be removable, due to the modular design of the product, each piece will be joined via steel bolts and nuts. Due to the durable nature of these materials, it is unlikely that these components will need to be replaced for decades.

"steel fasteners would generally be expected to remain in a serviceable condition for more than 30 years." (Fleck, 2022).

Additionally as the table top can be removed from the base, the base itself can be utilised as a smaller table on its own, increasing the lifespan of the overall product.

The seats are designed to be modular as well, allowing the replacement of a specific section, rather than the replacement of the whole seat if damage occurs.

The modular design means that if one section of the seat is damaged, that section may simply be replaced, this results in a possible reduction of 87.5% of waste if the seat is damaged in one section (the ends of each seat are the most likely areas to be damaged).

Strategies to balance durability and enhance refurbishment and repairability

The seats are designed to be split into 8 separate pieces, each held together with clips, then each piece secured to a concrete pad within the ground, along with the table.

As these pieces can be removed less waste is generated. If the seats were one piece, if they were damaged they would either remain in that state, resulting in limited use, or they would be thrown in landfill (which would be the worst outcome of any product when relating to the circular economy), they may also be recycled again, however material can only be recycled so many times, "we can only recycle plastic 2-3 times before it becomes unrecyclable."

(Tayao, 2021). Recycling also uses additional resources.

Additionally due to the nature of the material, minor blemishes may be burned off to allow the material to become smooth again,. Or it may be sanded out.

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Stakeholder actions involved in accomplishing Circularity

The main stakeholder of this product would be the Parramatta council, due to the location of the planned park.

This council would need to establish a workforce whose duty it is to maintain and perform regular checkups on the state of this product. In order to achieve the maximum positive result of this product when relating to the circular economy, the replaceable pieces must actually be replaced.

Additionally there must be infrastructure available to transport new and old pieces., as well as manufacture and store new pieces to be used when needed. These Municipal changes would allow the product to perform its best when relating to the circular economy.

This product allows for sociality, which the stakeholder would gain from, given community approval.

Human Social Economical and Environmental Impacts

As previously discussed, this product is designed to bring people together. The design allows for 6 adults (or larger numbers of children), to congregate within the park closely together and socialise, whilst bringing food or other items or recreation such as a chess board.

The unique feature of this product is the open spaces to allow for wheelchair access.

Additionally these spaces may be used to accommodate transportable picnic chairs if the user so desires, the design does not feature back support, however if the user so wishes to utilise their own chairs or achieve this additional support, the option is facilitated for comfortable, rather than on traditional picnic chairs and tables, which feature a square design.

This product's features allow for any members of the community to engage with each other and socialise.

A study by BMC Public health found 4,756 park visitors over a month period within the metropolitan area, (Veitch et al., 2015). With this information we can see how much impact a park has on the social environment within society.

Additionally the aforementioned repair and refurbish strategies allow for the product to impact the environment on a significantly lower scale than traditional similar products.

This design has advantages over traditional wooden benches, as well as other plastic designs.

"An ordinary wooden park bench will begin to rot, lasting only about 50 years at most, but often less than that. Recycled plastic benches are prepared to last a lifetime with sturdy planks that won't rot or decay." (Crowd Control Warehouse, n.d.).

With this quote it can be seen that plastic benches last much longer than traditional wooden benches. Additionally the modular design of this product increases the longevity even further through repair abilities, as well as decreasing environmental impact if any un-repairable damage is done to the product, which is unlikely due to the durability of the material.

"Impact Strength: LLDPE exhibits excellent impact strength, which makes it suitable for applications requiring toughness and resistance to impact damage. For instance, in the

Water Table

construction industry, LLDPE geomembranes are used as liners in landfills and ponds to prevent seepage of liquids and chemicals into the soil." (Globalplasticsheeting.com, 2024).

UNSDG goal targets affected by the projec

My products main focus is on two particular UNSDG goals.

UNSDG Target 12.2

By 2030, achieve the sustainable management and efficient use of natural resources

UNSDG Target 12.5

By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

To pertain to target 12.2 we can look at the material itself. Plastic is made from natural resources "The raw materials used to produce plastics today are mostly found in the natural world, and include cellulose, coal, natural gas, salt, and crude oil." (Plastics Europe, n.d.). Therefore I endeavoured to make "efficient use of natural resources", as states within the UNSDG website.

Through the modular design the waste generated from this product if damaged is lessened, which in turn results in less material being used to create new parts, as mention earlier. Therefore this designs follows this UNSDG goal.

As my design is made from recycled, and further recyclable material it already follows UNSDG goal 12.5. However my product also follows the two additional goals of prevention, reduction and reuse.

As I used HDPE for the most likely to be damaged part of the product I am preventing waste in the first place.

Through the use of my modular design I allow for a reduction in wastage as less material, is needed to replace damaged parts.

Additionally the allowance for the table base to be used as its own table if the top itself is damaged I allow for reuse.

Water Table

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