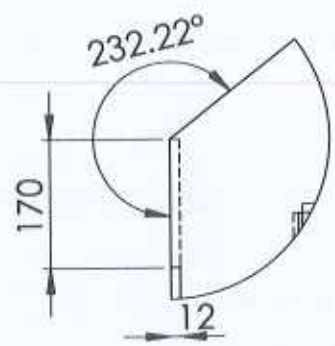


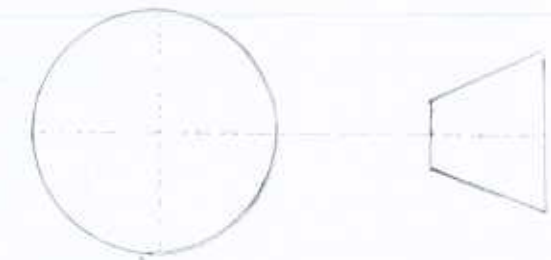
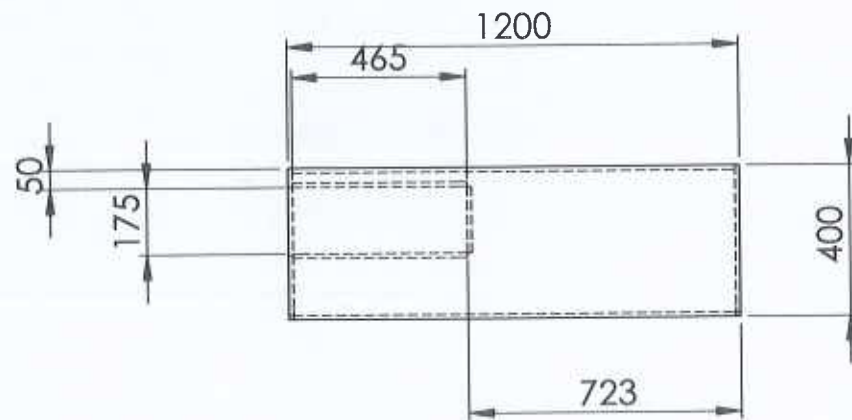
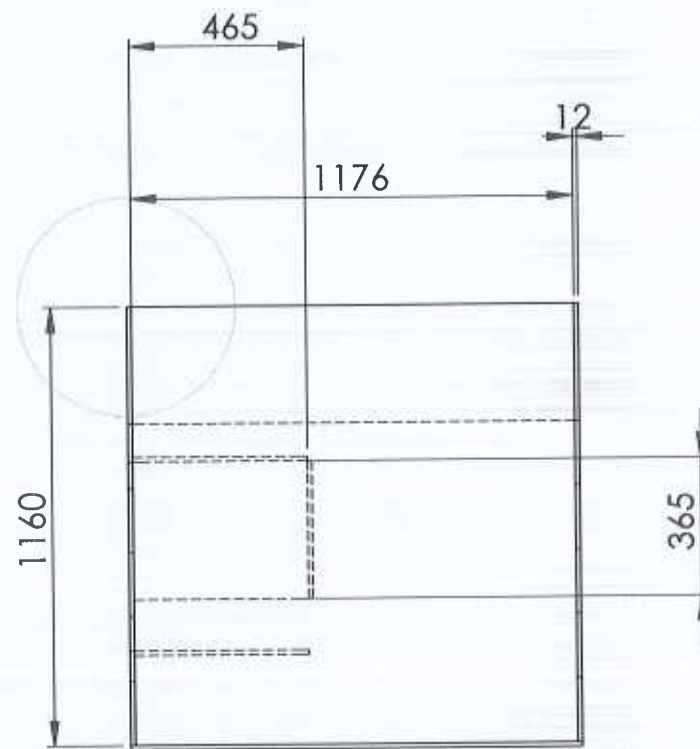
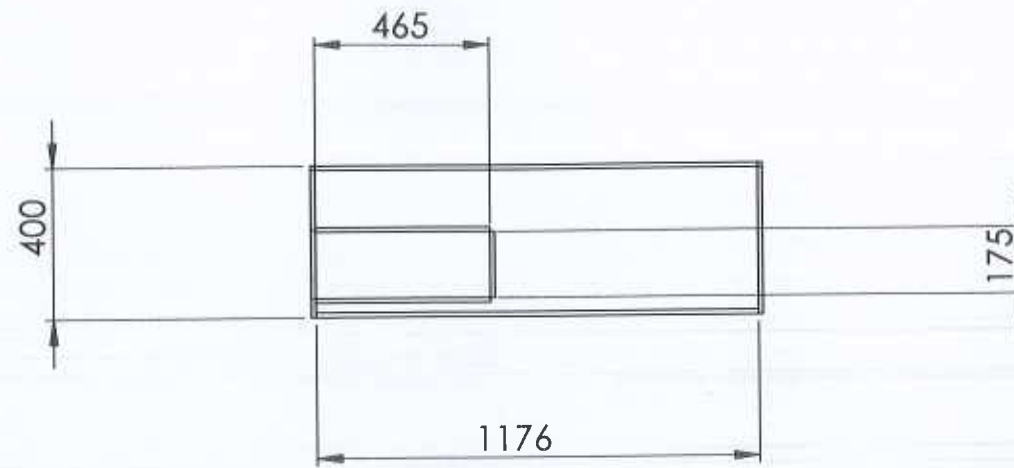
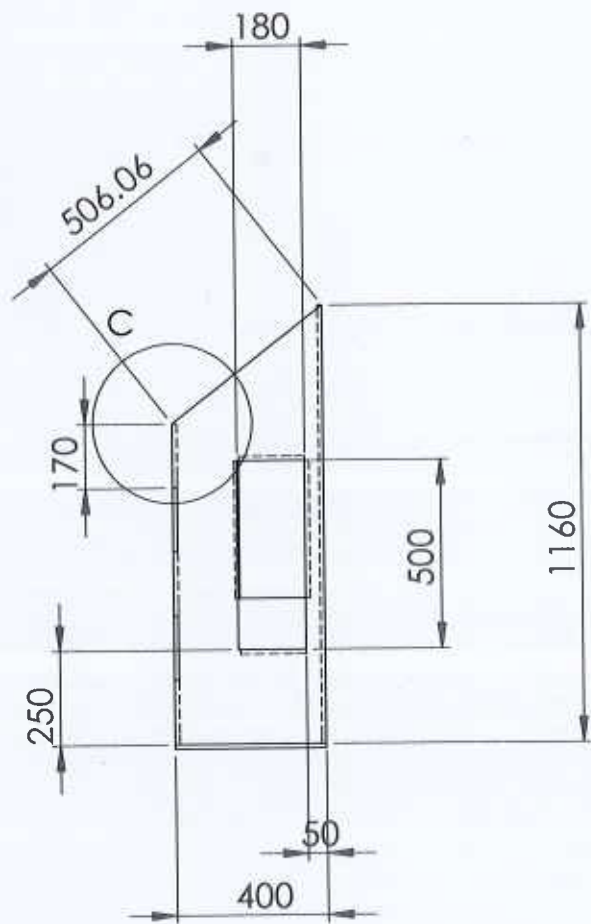
# Criteria 4

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Valentino T'Blaxill



DETAIL C



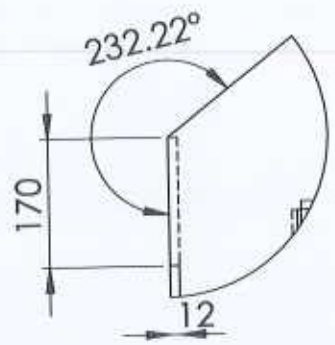
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Units: mm

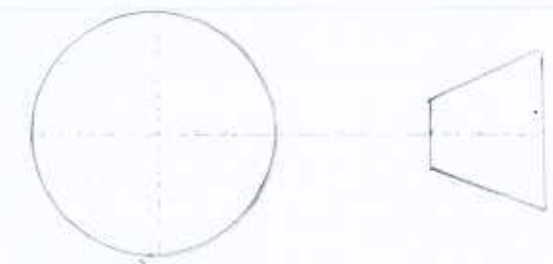
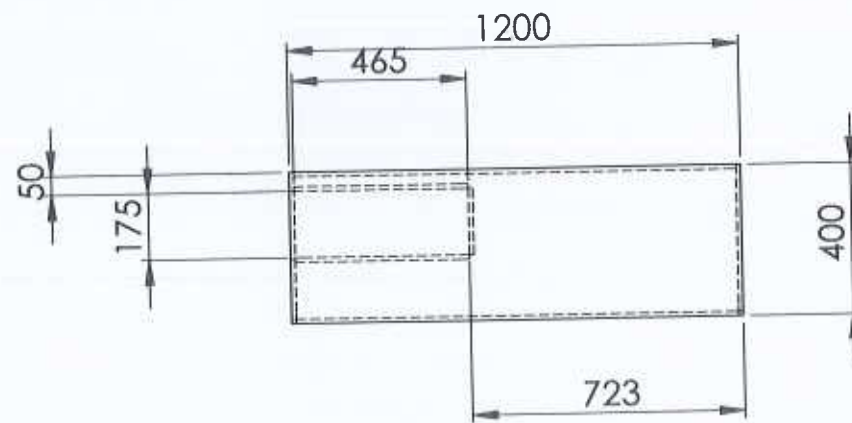
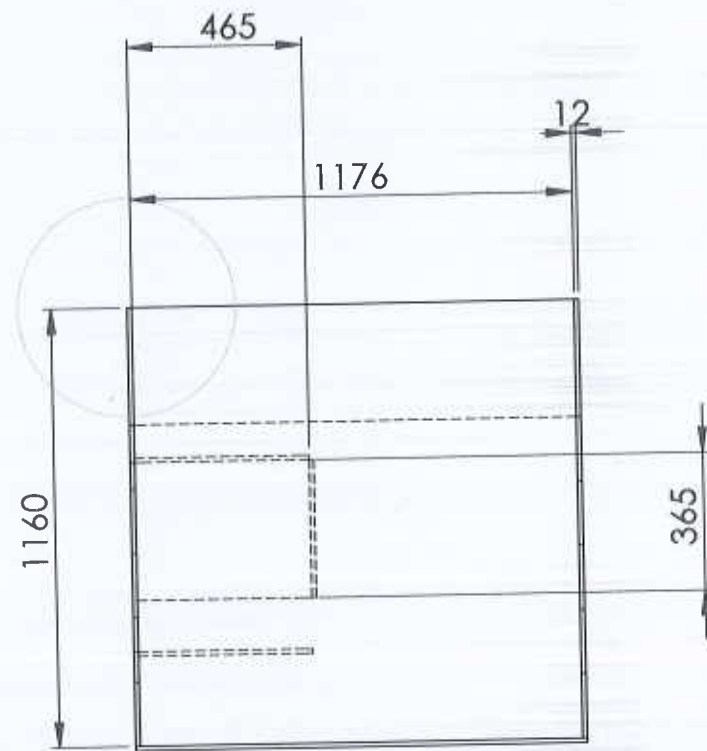
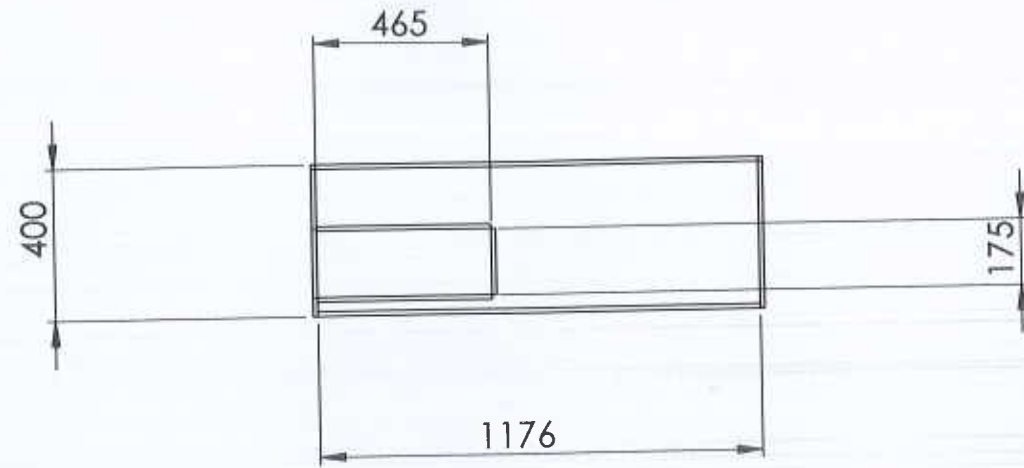
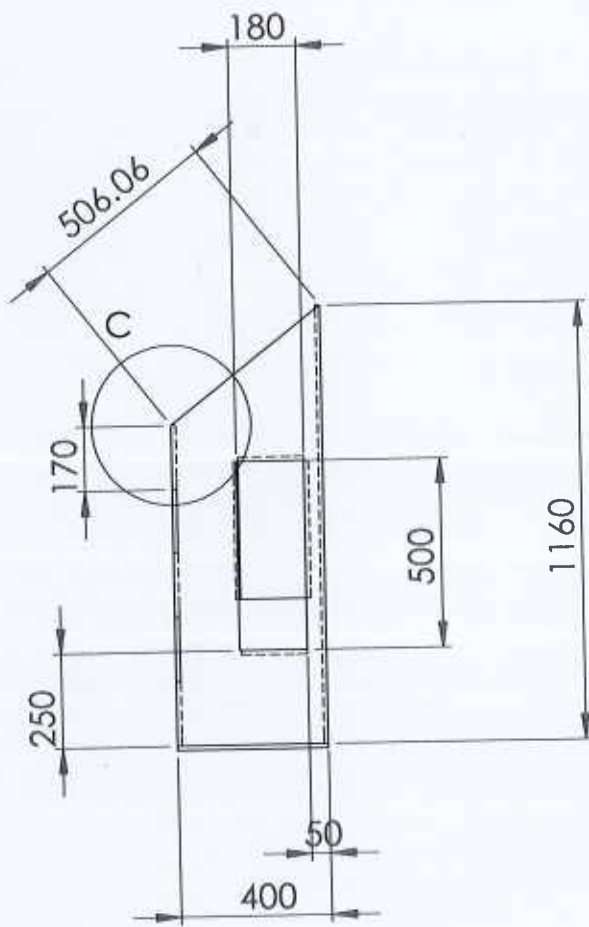
Scale: 1:20

3<sup>rd</sup> Angle orthogonal projection

Van inside cupboard



DETAIL C



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Units: mm

Scale: 1:20

3<sup>rd</sup> Angle orthogonal projection

Van inside cupboard

Final idea:

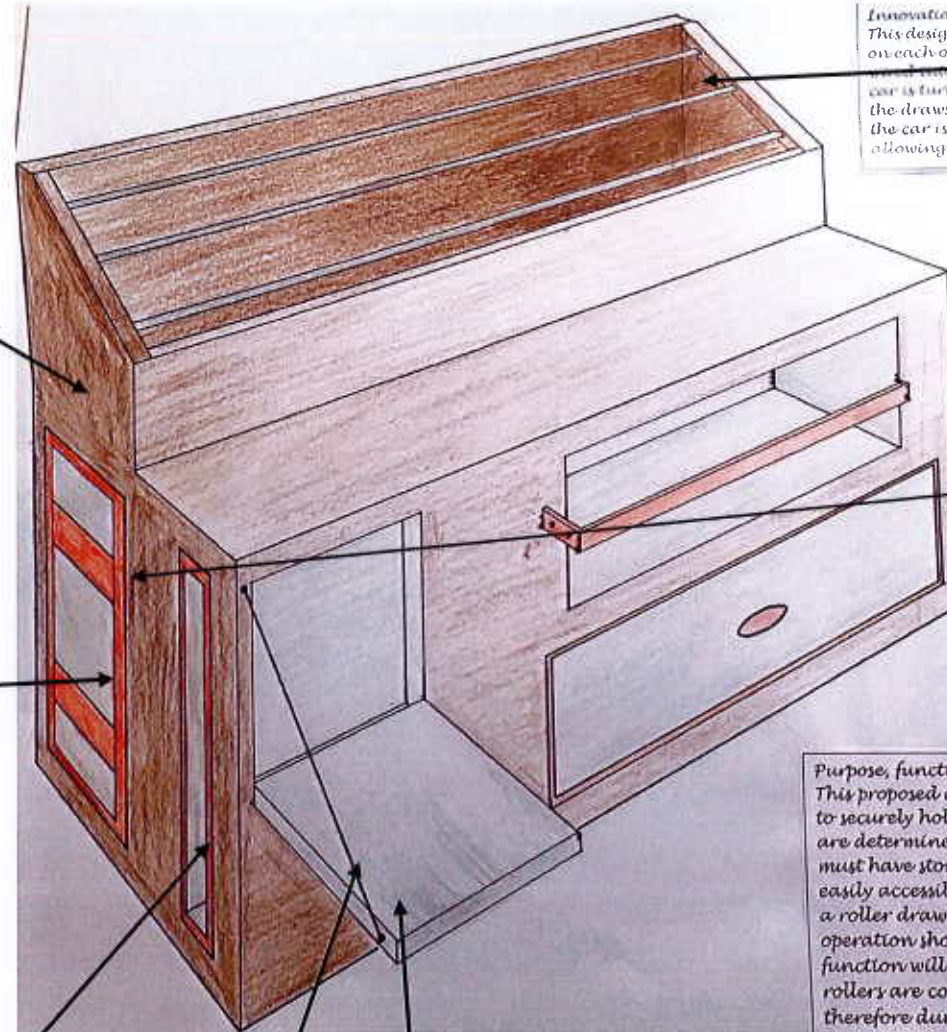
**1:** The main body of the cupboard will be made out of 12mm birch plywood. This is because its desirable properties which include being very strong for its weight, aesthetically pleasing, very accessible, and good durability. Its strength to weight ratio is important as the product must be structurally sound as it will hold weight and act as a support for the fold out bed. It also must be light as the van does not have much power and added weight will reduce aspects of handling and fuel efficiency which are both important to my end user.

**2:** This basket that the water tank will sit in will be made out of mild steel. This will be constructed from flat rectangle bar which will be cut to lengths and Mig welded together. This will be made out of Mild steel as it needs to support the weight of a 25L water tank. Mild steel is very strong and durable and will suit this application perfectly. However mild steel is subject to rust and especially when around water so I will use hammarite paint to finish it and protect it from rust and wear. I have chosen this over wood as it can be made of a lot thinner material which will reduce its total size. This is important as the cupboard is only 300mm wide and the water tank is 170mm wide and I also need to fit the slot for the camping chair which will take 30mm clearance. These tight dimensions means the cage that the water tank fits in must be compact and tight fitting.

**3:** This pocket will hold the fold out chair and will have a foam inlay to hold it secure. This will be made out of Medium density foam. This will form a secure slot that the chair will push fit into and will hold it secure whilst driving. This use of foam will mean that there will be not any rattling whilst driving and it won't mark the chair. This provides a simply compact storage solution.

**4:** This support for the fold out table will be made out of an old bike chain. This will link the product to one of my user's interest and will add a cool design influence to the cupboard. It will also be a strong hold as it is made from steel.

**1:** This will act as a shelf and will hold the user's computer or plate if they the user is lying/sitting in the bed. This will also be made out of 12mm birch plywood.



*Innovation*  
This design on each of the drawers is to make the drawers of the car is to allow the d

**5:** This top section will include elastic rope between each side. This will make a stuff sack area for loose clothing and equipment. The use of elastic rope will make it easy to stuff items in the area whilst keeping everything secure whilst driving. The material is chosen for its elastic properties.

**6:** To attach the metal cage to the plywood frame I am going to use a set of locking draw slider with a weight limit of 40kg. These will make the operation smooth and easy and will lock securely into place so when you are driving the tank does not move. These sliders are made out of heavy duty metal and will stand up to the absurd.

*Purpose, function*  
This proposed design to securely hold are determined must have storage easily accessible a roller draw to operation should function will be rollers are con therefore dura

Parts List	Material	Process
1	12mm birch plywood	Finger joint, thru housing joint
2	Mild steel (flat rectangle bar)	Mig welding
3	Medium density foam	Cut by hand to fit in location
4	Old bike chain	Broken to length using a chain breaker
5	Elastic rope	Will be tied to each side of the cupboard in the top section.
6	Locking draw sliders	Screwed into place
7	Hammerite paint	Spray paint raw steel

**Production plan:**

Time	Operation description	Process	Tools required	Materials	Quality assurance checks	Safety	Comments of change
20min	Cut out base cupboard shape using the CNC router.	<ul style="list-style-type: none"> <li>- Load technical drawing onto CNC router program. Ensure that this file is in DXF form.</li> <li>- Load the piece of plywood onto the CNC router bed.</li> </ul>	<ul style="list-style-type: none"> <li>- Computer</li> <li>- CNC router</li> </ul>	<ul style="list-style-type: none"> <li>- 12mm birch plywood 1200x1200</li> </ul>	<ul style="list-style-type: none"> <li>- Make sure that the piece of plywood is sitting square on the CNC router bed.</li> <li>- Make sure all of your CAD design is correct and accurate.</li> <li>- Set focus and origin of the tool.</li> </ul>	Ensure that all guards are in place, the vacuum clamp is on. Extraction is on.	
20min	Make cardboard templates of the vans contour.	<ul style="list-style-type: none"> <li>- Hold cardboard up to the inside curve of the van and mark out rough edge with a marker. Then use scissors to trim cardboard to fit slowly remove material until you have a flush fit.</li> </ul>	<ul style="list-style-type: none"> <li>- Scissors</li> <li>- Marker pen</li> </ul>	<ul style="list-style-type: none"> <li>- Large sheets of cardboard</li> </ul>	<ul style="list-style-type: none"> <li>- Slowly remove material to form a snug fit so you have an accurate template to trace onto the wood.</li> <li>- Make this template fit as close as possible to the curved edge of the van.</li> </ul>	Be careful when using scissors.	
15min	Transfer this template onto the cut out wood panels.	<ul style="list-style-type: none"> <li>- Use masking tape to hold template in place and use a pencil to trace the outline on the plywood.</li> </ul>	<ul style="list-style-type: none"> <li>- Pencil</li> <li>- Masking tape</li> </ul>	<ul style="list-style-type: none"> <li>- Cut out plywood panels</li> </ul>	<ul style="list-style-type: none"> <li>- Have a reference point on the template to ensure that you can accurately align the template on the piece of plywood.</li> <li>- Use masking tape to hold it in place so that this position does not move whilst tracing giving the most</li> </ul>	N/A	

					accurate copy as possible.		
15min	Cut base shape panels to fit. Cut along the outline of the template.	<ul style="list-style-type: none"> <li>- Secure the panel to a work desk using quick jaw clamps</li> <li>- Using a jigsaw follow the line marked out in the previous step.</li> </ul>	<ul style="list-style-type: none"> <li>- Jigsaw</li> <li>- Quick jaw clamps 2-3</li> </ul>	<ul style="list-style-type: none"> <li>- Plywood panels</li> </ul>	<ul style="list-style-type: none"> <li>- To ensure an accurate cut take your time and don't rush.</li> <li>- Make sure the jigsaw is in working order and has a sharp blade to achieve a nice clean cut.</li> <li>- Securely clamp material so that it doesn't move or vibrate during the cut.</li> </ul>	Follow PPE for using a jigsaw. Where safety glasses and apron whilst operating the machine.	
30min	Finalise location for chassis mounts Cut and drill holes for them to notch into.	<ul style="list-style-type: none"> <li>- Mark out using a pen the most appropriate points for the cupboard to mount on.</li> <li>- Use a cordless drill with hole saw to cut out hole in chassis of the van for the head of the bolt to fit thru.</li> <li>- Notch down from that hole to form a channel that the bolt will slide down into.</li> </ul>	<ul style="list-style-type: none"> <li>- Cordless drill</li> <li>- 3.5cm hole saw</li> <li>- Marker pen</li> <li>- Hand held saw</li> <li>- Tin snips</li> <li>- Clamps</li> </ul>	<ul style="list-style-type: none"> <li>- Bolts and mounting hardware</li> <li>- Users van</li> </ul>	<ul style="list-style-type: none"> <li>- Accurately measure out the points that the mounting hardware will sit.</li> <li>- Make sure drill is at right angle to van chassis when drilling.</li> <li>- Ensure notch is the same dimensions as the square profile of the stem of the bolt.</li> </ul>	Wear safety glasses when using the drill. Wear gloves to ensure you don't cut on the sharp metal after cutting.	
25min	Make spacers to sit between bolt and cupboard. Tack weld spacers in place.	<ul style="list-style-type: none"> <li>- Use a scribe to make out spacers of metal sheet.</li> <li>- Cut out using tin snips.</li> <li>- Clean and prep the van chassis using a grinder.</li> <li>- Tack weld bolt and spacer in place to avoid movement.</li> </ul>	<ul style="list-style-type: none"> <li>- Angle grinder</li> <li>- Tin snips</li> <li>- Mig welder</li> <li>- Scribe</li> </ul>	<ul style="list-style-type: none"> <li>- 1.5mm sheet metal steel 100x100mm max</li> <li>- Mounting hardware</li> <li>- Users van</li> </ul>	<ul style="list-style-type: none"> <li>- Make a paper template to get the size of spacer accurate.</li> <li>- Accurately mark this template on the sheet steel.</li> <li>- Use correct setting for type and thickness of material for Mig welder.</li> <li>- Practice welding on thin sheet metal so that</li> </ul>	<ul style="list-style-type: none"> <li>- Wear appropriate PPE for grinder and Mig welder. Wear leather apron, workshop overalls, welding mask and thick gloves.</li> <li>- Ensure that you are using it in a well ventilated environment.</li> <li>- Be careful when using grinder to</li> </ul>	

					you don't burn thru the thin wall of the van.	avoid possible injury. Wear eye and ear protection when using angle grinder. - When welding ensure that extraction system is on and funnel is positioned close to work area.	
30min	Finish mounting location with a coat of paint to protect the exposed metal from rust.	- Mask for over spray and paint areas of bare metal.	- Masking tape	- White paint - Newspaper	- Apply thin light coat to ensure that the paint doesn't run. Leave it to dry fully before touching to not leave finger prints or marks.	- Make sure you paint in a ventilated area. - Open all of the door to pull air through the van.	
45min-1hr	Construct main shape of the cupboard.	- Do a dry run before clueing up ensure that you have all the. Appropriate clamping locations. - Apply a thin cover of glue to finger joints and hold/compress using clamps. - Wipe of excess glue that gets pushed out after the clamps are applied. - Leave to set and dry.	- Clamps	- PVA glue - Plywood panels	- To ensure high quality ensure that you make a dry run to make sure you have all the appropriate clamping locations and that it all lines up before using glue. - Ensure that all clamps are hold the pieces square to each other with enough pressure to for a secure bond.	- N/A	
5min	Drilling holes for mounting hard ware to fit thru.	- Put basic frame structure in the van and mark out wear the mounting bolts will sit on the cupboard.	- Hand held router - Marker pen - Ruler - Carpenters square	- Glued cupboard frame/ outer panels.	- Accurately sit the cupboard in place to ensure the slats are in the right location. This	- Use appropriate PPE for hand held router. - Avoid wearing loose clothing and tie up hair if	

		<ul style="list-style-type: none"> <li>- Then use a router to make two slats for hardware to fit through.</li> </ul>			<ul style="list-style-type: none"> <li>- will ensure that it sits close and flus in the van.</li> <li>- Accurately outline area for routing and take care when using router to keep that line straight.</li> </ul>	<ul style="list-style-type: none"> <li>- it is dangling close to the tool to ensure that you cannot become entangled.</li> <li>- Make sure workshop extraction system in turned on whilst using the router.</li> </ul>	
1hr	Construct the metal draw that the water tank will sit in.	<ul style="list-style-type: none"> <li>- Cut lengths of rectangular flat bar out to form a 360x170x460mm rectangular box.</li> <li>- Cut all sections out using an angle grinder and clean the metal so that it forms a good weld.</li> <li>- Tac weld frame in place and check that water tank fits.</li> <li>- Fully weld the box using a Mig welder.</li> <li>- Attach one side of the</li> </ul>	<ul style="list-style-type: none"> <li>- Mig welder</li> <li>- Angle grinder</li> <li>- Scribe</li> </ul>	<ul style="list-style-type: none"> <li>- Rectangle flat bar 20x2mm size</li> </ul>	<ul style="list-style-type: none"> <li>- Accurately mark out lengths using a scribe and tri square.</li> <li>- Accurately cut lengths to size</li> <li>- Clean and prepare metal for a clean strong weld</li> <li>- Tac weld frame together to ensure that the water take fits.</li> <li>- Use the correct settings on the Mig welder to get the best penetration in material without burning through resulting in a strong weld.</li> </ul>	<ul style="list-style-type: none"> <li>- Wear correct PPE to ensure that they are not exposed to the UV and IR radiation. This includes welding mask, long overalls, leather frame resistant apron and thick welding gloves. This will minimise the risk to eye damage radiation exposure and burns.</li> </ul>	
45min	Make the pull out draw.	<ul style="list-style-type: none"> <li>- Mark out all measurements for draw panels.</li> <li>- Cut out all sides of draw out of plywood.</li> <li>- Use PVA glue and screws to hold draw together.</li> </ul>	<ul style="list-style-type: none"> <li>- Tri square</li> <li>- Pencil</li> <li>- Jigsaw</li> <li>- Cordless drill W/Philips head bit</li> <li>- Clamps</li> </ul>	<ul style="list-style-type: none"> <li>- PVA glue</li> <li>- Wood screws</li> <li>- 12mm plywood</li> </ul>	<ul style="list-style-type: none"> <li>- Accurately mark out dimensions for draw</li> <li>- Double check measurements before cutting</li> <li>- Use clamps to securely hold draw in place whilst glue is drying this will ensure that the</li> </ul>	<ul style="list-style-type: none"> <li>- Appropriate PPE for using a jigsaw.</li> <li>- Keep hands and body parts away from the moving blade and have a secure grip on the machine encase it grabs or moves suddenly.</li> </ul>	



					joint stay square and strong.	- Wear eye protection and workshop apron.	
30min	Construct the box that the water tank will slide into. And set up rollers	<ul style="list-style-type: none"> <li>- Mark out sheets of plywood for the box.</li> <li>- Cut out panels that make up the boxes construction.</li> <li>- Glue box in place</li> <li>- Attach on side of the roller on the metal draw made a few steps before.</li> <li>- Line up and attach the other side of the roller on the box.</li> <li>- Attach the front face piece to the metal draw.</li> </ul>	<ul style="list-style-type: none"> <li>- Jigsaw</li> <li>- Pencil</li> <li>- Tri square</li> <li>- Screwdriver</li> <li>- Clamps</li> </ul>	<ul style="list-style-type: none"> <li>- 12mm plywood</li> <li>- Draw sliders</li> <li>- Screws</li> <li>- Steel water tank cage.</li> <li>- PVA glue</li> </ul>	<ul style="list-style-type: none"> <li>- Accurately mark out dimensions for box. Using a tri square and ruler to ensure squareness.</li> <li>- Make sure to conduct a dry run before gluing to make sure all the panels fit and that it will all go together easily when glue is applied.</li> <li>- Use clamps to hold everything square and to ensure that the joint will be strong.</li> <li>- Accurately line up draw sliders on both the metal water tank cage and the box that it will slide into so it slides in smooth and is square and level.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure hair, loose clothing, rags and jewellery is kept clear of moving parts when in use.</li> <li>- Aprons can be used to restrict loose clothing. Hair ties/hair nets can be used to secure long hair.</li> <li>- Ensure that appropriate PPE is worn which includes eye protection and workshop apron.</li> <li>- Keep hands and body parts away from the moving blade and have a secure grip on the machine encase it grabs or moves suddenly.</li> <li>- Don't rush take time and be careful when using Jigsaw.</li> </ul>	
30min	Construct frame work above slide out draw and make thru housing joints to hold shelving in place.	<ul style="list-style-type: none"> <li>- Make out are where the shelves will be located.</li> <li>- Mark out dimensions of shelves using a ruler and tri square.</li> <li>- Mark out lines for the thru housing joint to sit and set up router to cut out those groves.</li> </ul>	<ul style="list-style-type: none"> <li>- Jigsaw</li> <li>- Tri square</li> <li>- Pencil</li> <li>- Ruler</li> <li>- Router</li> <li>- Clamps</li> </ul>	<ul style="list-style-type: none"> <li>- 12mm plywood</li> <li>- PVA glue</li> </ul>	<ul style="list-style-type: none"> <li>- Carefully and precisely measure and mark out dimensions using the aid of a tri square and ruler to ensure proper fit.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure that appropriate PPE is worn which includes eye protection and workshop apron.</li> <li>- Keep hands and body parts away from the moving blade and have a</li> </ul>	










		<ul style="list-style-type: none"> <li>- Cut shelf pieces to size.</li> <li>- Glue shelves into place and use clamps to hold secure whilst glue is setting.</li> </ul>			<ul style="list-style-type: none"> <li>- Use clamps to hold everything square and to ensure that the joint will be strong.</li> <li>- Take time when using the router and make sure the guide is set up properly and to keep it hard up against the reference edge to ensure straight cut.</li> <li>- Check tool and make sure they are sharp and straight.</li> </ul>	<p>secure grip on the machine encase it grabs or moves suddenly.</p> <ul style="list-style-type: none"> <li>- Don't rush take time and be careful when using Jigsaw.</li> </ul>	
30min	Cut out door shape and attach hinges. This will cover the shelves in the previous step.	<ul style="list-style-type: none"> <li>- Mark out dimensions for the cupboard face using the aid of a tri square and ruler</li> <li>- Cut out this shape using the jigsaw.</li> <li>- Mark out location for hinge's to sit and attach them using screws.</li> <li>- Fit this part to the cupboard and test operation.</li> </ul>	<ul style="list-style-type: none"> <li>- Jigsaw</li> <li>- Tri square</li> <li>- Pencil</li> <li>- Ruler</li> <li>- Router</li> <li>- Screwdriver</li> </ul>	<ul style="list-style-type: none"> <li>- Screws</li> <li>- Hinges</li> <li>- 12mm plywood.</li> </ul>	<ul style="list-style-type: none"> <li>- Carefully and precisely measure and mark out dimensions using the aid of a tri square and ruler to ensure proper fit.</li> <li>- Check tool and make sure they are sharp and straight.</li> <li>- Accurately mark out hinge location and make sure the cupboard face sits level.</li> <li>- Test that it swings open as intended.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure that appropriate PPE is worn which includes eye protection and workshop apron.</li> <li>- Keep hands and body parts away from the moving blade and have a secure grip on the machine encase it grabs or moves suddenly.</li> <li>- Don't rush take time and be careful when using Jigsaw.</li> </ul>	
45min	Sand cupboard and prepare it for varnish.	<ul style="list-style-type: none"> <li>- With the aid of the electric sander and sanding block sand the cupboard with a high grit count sand paper</li> </ul>	<ul style="list-style-type: none"> <li>- Electric sander</li> <li>- Sand paper</li> <li>- Sanding block</li> </ul>	<ul style="list-style-type: none"> <li>- Cupboard</li> </ul>	<ul style="list-style-type: none"> <li>- Start with a medium grit and work towards a high grit.</li> </ul>	<ul style="list-style-type: none"> <li>- N/A</li> </ul>	





		to ensure that there is a smooth surface before the varnish is applied.			<ul style="list-style-type: none"> <li>- Sand with the grain for best results</li> <li>- Take your time and don't rush this stage.</li> </ul>		
25min	Final step applying clear varnish to cupboard and installing the finished unit into the van.	<ul style="list-style-type: none"> <li>- Apply thin multiple coats allow it to dry between coats</li> <li>- After unit is dry put it in the van and bolt it into place.</li> </ul>	<ul style="list-style-type: none"> <li>- Paint brush</li> </ul>	<ul style="list-style-type: none"> <li>- Clear varnish</li> </ul>	<ul style="list-style-type: none"> <li>- Take your time and make sure that it has fully dried in between coats.</li> </ul> <p>Don't apply thick coats this will cause runs in the finish.</p>	<ul style="list-style-type: none"> <li>- Apply this coat in a well ventilated area to avoid fume inhalation.</li> <li>- Wear gloves and do not get it in your eyes.</li> </ul>	



## Quality measures:

Stage of production	How to achieve
Working drawings	<ul style="list-style-type: none"> <li>- Ensure that all measurement are accurate and up to date.</li> <li>- Always have a set of working drawing availed to use as reference when marking out and cutting material to ensure that all piece are cut to accurate sizes.</li> </ul>
Pre-production: Material	<p>When selecting or receiving materials</p> <ul style="list-style-type: none"> <li>- Look for flaws in material(bow, crook, kink, cup and twist)</li> <li>- When looking at plywood make sure that the sheets a flat and that the outer layers of wood have a nice aesthetic without knots or marks.</li> <li>- Look for holes along cut line this will show you the quality and strength of the plywood look for areas with holes of air the fewer the better.</li> </ul>
Tool/equipment test	<ul style="list-style-type: none"> <li>- Ensure that all tools are in good working order and if using a cutting edge ensure that it is sharp and does not have damage on the edge of the tool. This will result in a clean cut without deflection.</li> <li>- Ensure that all of the equipment has been set up properly and do a test run to check that it preforms like it is supposed to on a scrape piece of timber.</li> <li>- Ensure that the user is well trained and has experience in using this tool.</li> </ul>
Before marking out	<ul style="list-style-type: none"> <li>- Double check that all dimensions are accurate refer to a correct working drawing to get these measurements.</li> <li>- Check your reference point on material for squareness this will make of you marks accurate.</li> </ul>
When marking material	<ul style="list-style-type: none"> <li>- Measure material twice and cut once.</li> <li>- Make all measurements with the aid of a ruler and a tri square to ensure the most accurate result.</li> <li>- When marking out take the blade thickness into consideration and account for it.</li> <li>- Mark wood out with pencil and ensure not to press to hard as not to indent the timber as this will be evident in the final product.</li> </ul>
When cutting material	<ul style="list-style-type: none"> <li>- Take time to align cutting blade with marks on wood always take the side of caution as it is easy to take material away but very hard to add it.</li> <li>- Ensure that guiding tools have been accurately set up.</li> <li>- Use jigs and clamps to hold it secure whilst working.</li> </ul>
When joining	<ul style="list-style-type: none"> <li>- Take a dry assembly before applying glue this makes sure that the joint fits together well and that you know where the clamp points on the joint.</li> <li>- After you are happy with the proceeds of the dry run move onto a wet assembly. Ensure to apply pressure square to the joint to keep it square whilst setting.</li> <li>- After joint is held together by clamps use a wet rag to wipe up excess PVA glue as when it dries it will leave a discolouration on the wood.</li> </ul>
When sanding	<ul style="list-style-type: none"> <li>- Start with coarse grit to remove major imperfections and work down to fine grits the finer you go the better the finish will be. Sand with the woods natural grain to ensure best results.</li> </ul>

## Risk assessment

Equipment	Image	Likely injuries	Likelihood	Seriousness of injury	Risk control	PPE
CNC router		<ul style="list-style-type: none"> <li>- Being cut by the sharp router bit</li> <li>- Being hit by the router bit if it snaps in the wood.</li> <li>- Injured from flying chunks of wood</li> <li>- Breathing in fine dust</li> </ul>	- L	- M	<ul style="list-style-type: none"> <li>- User should ensure that they were all of the appropriate PPE which include safety glasses and a workshop apron.</li> <li>- Ensure that the guard is secure and in place before turning on the machine as this minimise the debris and dust that can be kicked up by the router bit it also makes sure that the router bit cannot fly out if it snaps.</li> <li>- Ensure that router suction bed is turned on and that the workspace extraction is on.</li> </ul>	 
Hand held router		<ul style="list-style-type: none"> <li>- Being cut by the spinning router bit causing deep cuts</li> <li>- Being entangled through loose clothing or long hair by the spinning router bit.</li> <li>- Eye damage from projectile</li> <li>- Dust pneumonia</li> </ul>	- M	- M	<ul style="list-style-type: none"> <li>- Ensure all hands and fingers are on the top of the machine and away from the blade to minimise the risk of being cut from the router bit.</li> <li>- Avoid wearing loose clothing and tie up hair if it is dangling close to the tool to ensure that you cannot become entangled.</li> <li>- Ensure that all of the appropriate PPE is wore which include eye protection and work shop apron.</li> <li>- Ensure that workshop extraction system is on when operating this router.</li> </ul>	 
Electric hand sander		<ul style="list-style-type: none"> <li>- Grazes can occur from skin contact with the sanding bit while not severe still an injury to be occur of when using machine.</li> <li>- Dust inhalation can result in reparatory problems and can lead to irritated eyes and throat. Dust inhalation can also lead some</li> </ul>	- M	- L	<ul style="list-style-type: none"> <li>- Ensure hair, loose clothing, rags and jewellery is kept clear of moving parts when in use.</li> <li>- Aprons can be used to restrict loose clothing. Hair ties/hair nets can be used to secure long hair.</li> <li>- Ensure that appropriate PPE is worn which includes eye protection and workshop apron.</li> <li>- Keep hands and body parts away from the moving blade and have a secure grip on the machine encase it grabs or moves suddenly.</li> <li>- Ensure that workshop extraction system is on when operating this tool or make sure that you are working in a well ventilated area.</li> </ul>	 

		<ul style="list-style-type: none"> <li>- forms of throat and lung cancer.</li> <li>- Eye damage from dust and projectiles from sander</li> <li>-</li> </ul>				
Jigsaw		<ul style="list-style-type: none"> <li>- Long hair, loose clothing, rags and jewellery can become entangled in the moving parts of the equipment.</li> <li>- The mobile exposed moving saw blade presents a significant risk to an operator's hands and body parts. Could result in severe cuts.</li> <li>-</li> </ul>	- M	- M	<ul style="list-style-type: none"> <li>- Ensure hair, loose clothing, rags and jewellery is kept clear of moving parts when in use.</li> <li>- Aprons can be used to restrict loose clothing. Hair ties/hair nets can be used to secure long hair.</li> <li>- Ensure that appropriate PPE is worn which includes eye protection and workshop apron.</li> <li>- Keep hands and body parts away from the moving blade and have a secure grip on the machine encase it grabs or moves suddenly.</li> </ul>	
Bench saw		<ul style="list-style-type: none"> <li>- Severe cutting from spinning blade, possible loss of limbs</li> <li>- Dust inhalation can result in reparatory problems and can lead to irritated eyes and throat. Dust inhalation can also lead some forms of throat and lung cancer.</li> </ul>	- L	- H	<ul style="list-style-type: none"> <li>- Ensure hair, loose clothing, rags and jewellery is kept clear of moving parts when in use. To avoid entanglement.</li> <li>- Keep hands and body parts clear of spinning blade and moving parts.</li> <li>- Ensure that correct PPE is worn which includes eye protection, workshop apron and leather shoes to minimise risk of possible injury.</li> <li>- This machine can only be used by a qualified teacher/technician, do not attempt to use this machine as a student.</li> <li>- Ensure that workshop extraction system is on when this tool is in use.</li> </ul>	

Mig welder		<ul style="list-style-type: none"> <li>- This process causes the release of toxic fumes and vapours which can be harmful for the users health.</li> <li>- The arc that the welder creates with the material is a very bright light which can cause arc eye if no PPE is worn when welding this can result in severe eye damage.</li> <li>- Burns can occur from touching hot pieces of metal after welding.</li> <li>- This burns can also be on arms if the user has exposed skin from the bright light, heat and radiation.</li> </ul>	- M	- H	<ul style="list-style-type: none"> <li>- To ensure that the fumes created from the welding do not impact the user the workshop space must have a sufficient extraction system which must be turned on before use of welder.</li> <li>- The user must wear correct PPE to ensure that they are not exposed to the UV and IR radiation. This includes welding mask, long overalls, leather frame resistant apron and thick welding gloves. This will minimise the risk to eye damage radiation exposure and burns.</li> </ul>	
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**Material costing table:**

Material:	Cost
12mm birch plywood 2440x1220	\$174.06 per sheet
Eggshell medium density foam 500x500	\$59.95
Locking draw sliders x2	\$20x2= \$40
Mild steel flat rectangle bar 2m	\$11.08 per metre =\$22.16
Shock cord 8m	\$1.60 per metre =\$12.8
Clear varnish 1L	\$46.90
Total	=\$355.87