SECTION 1

ENVIRONMENTAL QUALITY COSTS

Environmental prevention costs

These are costs that the business incurs to prevent damage to the environment. An example of such a cost which has already been incurred is the cost of the solar panels recently installed on the roof. If we did not have these solar panels, we would be buying in electricity which would be creating carbon emissions: self-generating electricity reduces our impact on the environment.

An example of an environmental prevention cost that we will incur in the future is the cost of developing the new recycled climbing frame range. Because the range will be made from recycled elements, this means that we will not be using natural resources such as trees and hence again lessening our impact on the environment.

Environmental appraisal costs

These are costs that the business incurs to assess whether it is complying with environmental standards and policies, whether these are internally or externally set. An example of such a cost that we already incur is the cost of the smart meter that we recently installed. This allows us to monitor energy consumption and therefore measure our impact on the environment.

An example of such a cost that we will incur in the future is the cost of developing a formal environmental policy for the business. This will include staff time as well as the cost of any external consultant that we engage.
Environmental internal failure costs

These are costs that the business incurs to mitigate environmental impacts that it has created and are borne entirely by the business. An example of such a cost that we already incur is the cost of recycling the sawdust that is generated out of the wood cut offs in the production process. Wood is a natural resource and cut offs represent waste. By sending the sawdust to a recycling company we are mitigating this failure.

An example of such a cost that we could incur in the future might be the cost of recycling other waste generated such as packaging or perhaps consider producing small wooden toys from the wood cut offs.

Environmental external failure costs

These are costs that either the environment suffers as a result of the business generating harmful impacts on the environment or the business incurs when there is harm to the environment. An example of such a cost that is already incurred is the harm to the environment of using a natural resource such as wood. As a result of using non-recycled wood in our products, trees are cut down.

An example of such a cost that could arise in the future is the loss of our reputation and a reduction in customer goodwill if say there is a spillage of the wood preservative that we use into the water system. This would generate bad publicity for us which would negatively affect goodwill.

CORPORATE SOCIAL RESPONSIBILITY

Economic responsibilities

All businesses have an economic responsibility to provide a return to shareholders, whether that be in the form of dividends or growth in the value of the business. Trigg Adventure meets this responsibility as it is a profitable business, for example, generating an after-tax profit of F$1,090,000 in the last financial year. A dividend of F$360,000 was paid to shareholders, which given that the shareholders are also directors of the business and make the decisions indicates that this responsibility is fully met.

Another economic responsibility is to employees, to ensure that they have fair conditions of employment and are paid a fair wage for their work. All of our staff are paid at above the national minimum wage and pay rates increase with experience. Given the proximity of other woodworking businesses, we offer a competitive rate to our production staff: we also have a bonus scheme for our sales staff. The fact that the level of staff retention is high indicates that we do meet this responsibility.

We also have an economic responsibility to our customers to provide them products and a service that are value for money. Our climbing frames are of the highest quality materials and workmanship and our prices are competitive in the market.

Legal responsibilities

Trigg Adventure has a legal responsibility to ensure that it meets all of the laws of Fawland. We certainly do this in terms of meeting minimum wage requirements. We also meet safeguarding rules regarding our installers who all have up-to-date disclosure documents to show that they do not have a criminal record and therefore are clear to work around children.
Ethical responsibilities

Trigg Adventure has an ethical responsibility to act in a manner which is fair and just, even where there is no legal responsibility. Managing our impact on the environment would fit into this responsibility. We need to be seen to be taking steps to lessen our impact on the environment and whilst we've started to take steps towards this with the solar panels and smart meters, there is plenty more that we could do to discharge this responsibility.

Ensuring the safety of our climbing frames is both a legal and an ethical responsibility. All of our products meet the relevant safety standard rules and we currently have the highest safety ranking available in Fawland. We go beyond this though as Ben Darcy, Production Director, is actively involved in safety compliance and ensures that the workmanship is of the highest quality.
SECTION 2
LEAN PRODUCTION

Factory workflow

Lean production is about minimising the use of resources, including staff time. We therefore need to ensure that the workflow in our production area is laid out as efficiently as possible. Currently the cutting and finishing departments are located in separate areas of the factory building. It may be more efficient to integrate the two functions so that as soon as timber is cut it can be drilled and finished. This would speed up the whole process and save direct labour time. However, a possible constraint to achieving this is the fact that it may not be safe for staff to be working with spraying equipment in the same vicinity as cutting and drilling equipment due to ventilation issues. We need to ensure that our production staff are safe and therefore, given the equipment they have to work with it is important that there is adequate space to work in a safe way.

We could also consider changing the way that the packing team operates. Currently a single member of staff packs all of the elements to complete a product. This is time consuming because each member of staff has to walk to each inventory bin in order to pick items. Instead we could set up a packing line where a number of complete products are packed at the same time as this would potentially reduce the number of times an inventory bin is visited. A possible problem with this is that there is a greater risk that some components are missed for some of the completed units.

Inventory management

A characteristic of lean production is keeping inventory levels to a minimum: this means raw materials, work-in-progress and finished goods. Low raw material levels can be achieved by securing good relationships with suppliers so that timber and items such as swing seats are only received when we are ready to use them or sell them. Currently we hold four weeks’ worth of timber inventory and given that we do have good relationships with timber suppliers means this period could be considerably reduced. A possible problem here though is the ability of our other suppliers to be flexible in how they deliver goods to us. There could be an impact on the prices they charge if we ask for preferential treatment with delivery.

Low finished goods inventory could be achieved by ensuring that our sales orders for domestic products are more closely linked to the production schedule. At the moment for a significant part of the year we maintain inventory levels for domestic products with a significant buffer. We need to consider reducing the buffer as this will not only free up capital into the business but will also reduce the risk that the inventory is damaged in our warehouse. The main issue is that we will still need to produce domestic products for inventory throughout the low sales months so that we have enough inventory at peak sales times.
ACTIVITY-BASED BUDGETING

Establishing the budget for machinery maintenance staff cost

The first step when using activity-based budgeting is to establish the activities that drive the cost that is being budgeted: these are servicing and repairs. The next step is to calculate the number of machinery services and the number of machinery repairs expected in a year. For services this is straightforward as each piece of machinery is serviced six times a year. Therefore, the number of services will be the number of pieces of machinery multiplied by six. For repairs, it is a little more complex because repairs could be required for all sorts of reasons such as use of equipment by inexperienced staff and accidents. However, it is likely the level of repairs is largely determined by the amount that the machinery is used which in turn depends on the level of production. We will have data for last year which shows the number of repairs based on last year’s production level and we should use this as a base to calculate the number of repairs we should expect for this budget periods level of production.

Once the level of activity is quantified, the total time required to meet this level of activity needs to be calculated. We know that a cutting machine takes 2.5 hours to service and therefore the number of hours required to service will be 2.5 x 15 cutting machines x 6 services a year. The same calculation can be done for drilling, sanding and spraying machinery to establish the total hours required for servicing. For repairs, establishing total hours required is a little more difficult because each repair is different and will require a different amount of time. However, we can use the average times already established based on previous experience. The total number of hours can then be calculated in the same way.

The final step is to work out the total number of hours required for machinery servicing and repairs and to determine how many members of staff this requires. We should bear in mind that a member of staff will not work 52 weeks a year, because of holidays and training. We also need to make sure that adequate set up time between activities is included. The total budgeted cost for the machinery maintenance staff will be the number of staff multiplied by the annual wage or salary.

The benefits of using activity-based budgeting for machinery maintenance staff cost

Using activity-based budgeting means that we look at what we need our maintenance staff to do in terms of activities. We can then use this information to help us plan and budget accordingly. It could be, given that we know maintenance staff are sometimes idle, that only two staff are needed based on the activities, and therefore we could budget on this basis. However, there might be good reason to have some slack with the maintenance staff budget so that if there is an emergency repair, it can be dealt with quickly to ensure production is not affected. Therefore, we would need to consider the opportunity cost of machine downtime from repairs not being dealt with quickly against the full cost of the staff budget.

By budgeting the hours that we expect the staff to be active, we can also identify any time that our three staff (assuming that we keep them all on) have available. This could either be used for preventative maintenance activities (which could potentially improve productivity) or to assist in other areas of the business, especially during really busy periods. They already do this anyway, however, using activity-based budgeting means that we can plan for this in a much more effective way.
SECTION 3
LINEAR PROGRAMMING GRAPH

The feasible region and optimal production plan

The feasible region is the area of the graph which shows all the combinations of production of the two designs which satisfy both of the timber constraints and the two minimum production levels.

Line A on the graph represents different combinations of production of the Regular Design and the Deluxe Design which will utilise all of the 15,000 lengths of Grade A reclaimed timber. Line B represents the same for Grade B reclaimed timber. The feasible region will be on and to the left of these two lines, because the lines represent maximum production.

Line C on the graph represents the orders that have already been committed to for Regular Design climbing frames. This is a minimum production level because we want to satisfy these orders. Line D represents the same for the Deluxe Design. The feasible region will be to the right of line C and above line D.

Taking both the timber constraints and the minimum production levels, the feasible region is the area of the graph to the right of the right angle created by lines C and D intersecting and to the left of the point where lines A and B intersect.

The optimal production plan can be found by moving the iso-contribution line (line ISO) as far as possible to the right within the feasible region. The optimal point is where lines A and B intersect, and the optimal production plan is therefore to produce approximately 430 Regular Design climbing frames and 720 Deluxe Design climbing frames.

Other factors

We should consider if it is worthwhile buying additional lengths of timber. Because the optimal point is where lines A and B intersect this means that both timber constraints are binding because the optimal solution will fully use the 15,000 lengths of each type of timber. This means that it would be worthwhile buying additional lengths of each type of timber as it would allow additional units to be made and therefore additional contribution to be earned.

For each type of timber, the maximum price that we should be prepared to pay will be the normal price per length plus the shadow price, where the shadow price is the increase in contribution from obtaining an additional length of each timber, with other constraints staying as given. Note though, that if say more of timber B becomes available, the constraint line moves away from the origin and there will be a point at which it will no longer be a binding constraint. At this point the shadow price becomes zero and it would not be worth buying additional lengths of the timber.

In addition, we need to consider what the anticipated maximum level of demand is for each design. The committed orders are 200 for Deluxe and 300 for Regular and yet the optimal solution is approximately 720 Deluxe and 430 Regular. The level of committed orders might indicate that demand for Regular might be more than for Deluxe and hence we might be better producing more of these: the Sales Department will be able to advise further on this.
NON-CURRENT ASSETS

Purchase of new equipment

To capitalise expenditure as part of plant and equipment we must be sure that a tangible non-current asset has been created. Under IAS 16: Property, plant and equipment, the two criteria to recognise an asset are that it is probable that the asset will generate future economic benefit (this is met because the cutting machine has been purchased to facilitate production) and is capable of reliable measurement (this is met because we know how much we spent on it). In addition, the asset must be a physical asset (which it is) and expected to be used for more than 12 months (it has a useful economic life in the business of 10 years).

The amount that can be capitalised will be the total of the assets purchase price (F$100,000) and any expenditure directly attributable to getting the asset ready for its intended use. The first item of expenditure which is directly attributable is the F$5,000 spent on installation. The cutting machine could not have been used without being properly installed and therefore this is directly attributable to getting it ready for its intended use. The second item of expenditure which is directly attributable is the F$1,000 spent on the Health and Safety inspection and certificate. It is a legal requirement to have this and therefore is a cost of getting the asset ready for its intended use: without the certificate the cutting machine could not legally be used.

The only item of expenditure that cannot be capitalised is the F$800 spent on training. The cutting machine will have been ready for its intended use whether or not the staff are trained. In addition, training is associated with people, who are free to leave employment and take the knowledge from the training with them. As a result, expenditure on training is not capitalised.

Disposal of old equipment

We will need to record the disposal of the old cutting machine in the financial statements. There will be a loss on disposal of F$1,750 – F$2,000 recorded in the statement of profit or loss, which will have the effect of reducing profit for the year. The value of property, plant and equipment will also be reduced by F$2,000 in the statement of financial position. The disposal proceeds of F$1,750 will also appear as an investing cash inflow in the statement of cashflows.

The old cutting machine will also need to be disposed of for tax purposes which will affect the corporate tax computation for the year. The tax charge for the year is based on taxable profit multiplied by the tax rate. Taxable profit is accounting profit plus non-allowable expenses such as depreciation and less allowable expenses such as tax depreciation allowances.

The disposal will affect the tax depreciation allowances for the year: there will be a balancing allowance of F$2,500 – F$1,750 which will increase the value of tax depreciation allowances and lower the tax charge.
SECTION 4
SALES VARIANCES

Sales price variances
The sales price variances are wholly operational which means that the selling price was not revised in the budget when the volumes were adjusted. The budgeted selling price is based on the price expected to be achieved after discounts have been negotiated and therefore if a variance is favourable this means that the negotiations were in our favour and if adverse this means that the discount negotiations were in the favour of the customer. It would appear that our Sales Department were able to negotiate a lower discount for the Deluxe Design but had to give away more discount than expected for the Regular Design.

Sales volume contribution variances
The sales volume contribution variances have been split into their planning and operational elements. The planning variances show that for both designs we revised the budget to reflect a higher volume of sales: this is in line with the fact that in the original budget we had underestimated sales.

The operational variances show that compared to the revised budget we actually sold more of the Regular Design and less of the Deluxe Design. Indeed, compared to the original budget we actually sold less of the Deluxe Design than we were originally expecting to. One reason for this could be that customers preferred the Regular Design to the Deluxe Design, either because of the design or because the price was more attractive to them. The fact that we gave away a higher level of discount on the Regular Design means that perhaps prices in the retail stores were more competitive for this product, which encouraged sales.

Total variances
Overall, the favourable total sales variance means that we have generated more contribution from this range than we originally thought as a result of selling more units than we expected.

Issues to be considered for the 2020 sales budget
It would appear that the mix of sales is different to that we originally budgeted and therefore potentially the budgeted mix needs to be changed. We need to consider if the actual mix reflects customer preferences or whether it is a result of pricing policy. If it is the former than it would be sensible to adjust the mix in the budget so that future variances can be measured against realistic targets. If it is the latter, then we need to consider whether our pricing policy is appropriate and therefore whether a change in mix will arise.

We also need to consider what the anticipated level of demand might be. This will be affected by all manner of factors such as whether our competitors are also launching climbing frames made from recycled materials, the general economic outlook and whether there are enough customers interested in recycled products to keep buying our climbing frame. In addition, we will need to consider the pricing policy and whether we formalise the level of discount to be offered.
SHORT-TERM INVESTMENT

When considering the suitability of short-term investments, we need to consider the following: profitability, liquidity and safety.

Keep surplus funds in the bank account

Retaining the surplus funds in the bank account does have the advantage that it keeps the business highly liquid. This means that should something unforeseen arise, such as the need for major repairs on a piece of equipment or a significant increase in timber prices, the business will quickly be able to make payments. It is also a safe form of investment as there is almost no risk of the capital value of the monies in the bank account falling. However, this option gives only a minimal return on the funds and hence is the least profitable option being considered.

Invest in Treasury Bills

Investing in short-term Treasury Bills is a safe form of investment because Treasury Bills are issued by the Government and are therefore deemed to be risk free: this means that there is no chance of losing the capital value invested. They are also highly liquid investments because they are negotiable instruments which can be sold on the market. Therefore, if we needed access to cash due to an unforeseen expense we could sell the Treasury Bills to release our investment. Treasury Bills are usually issued at a discount and then sold or redeemed at their maturity date at a higher value: this difference represents the return on investment. Overall this is a relatively safe form of investment, which will give us a return, although this will be a low return.

Invest in the stock market

Investing in the stock market means investing in the equity shares of other businesses and this is very risky. There is a chance that we could make fantastic returns from buying and then selling shares listed on the stock market, however there is also a chance that we end up losing some of the cash invested. Given that we are looking to invest this money in four months’ time into an expansion of the factory, safety of the amount invested needs to be of paramount importance. Therefore, we should not take this risk.

Invest in an interest-bearing deposit account

One additional suggestion would be to invest the surplus cash into an interest-bearing deposit account for a period of four months. This is likely to be a safe investment (even if the bank were to find themselves in difficulty, it is likely that deposits would have some form of Government protection) and would generate a return. The level of return will depend on the amount invested and also whether the funds were tied up for the entire period of deposit or accessible. If the funds were tied up this would usually give a higher return, although would mean that the investment wasn’t liquid in the event of unforeseen circumstances.