T4- Part B – Case Study

BZCS – Construction company case – March 2011

REPORT

To: Commercial Director of Sports Facilities Division of BZCS

From: Management Accountant

Date: 1 March 2011

Review of issues facing BZCS’s Sports Facilities Division

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1.0 Introduction

BZCS Sports Facilities Division is one of 6 divisions within BZCS which is a wholly owned subsidiary of BeeZed, a listed company. The Sports Facilities Division of BZCS, had revenues of €145.2 million in the financial year ended 30 September 2010 and an operating profit of €3.4 million. BZCS needs to complete projects on time and to meet agreed budgets.

BZCS operates in a competitive market and achieves low operating profit margins, which is the norm for the construction industry. BZCS overall achieved an operating profit margin of only 2.74% in the last financial year ended 30 September 2010, and the Sports Facilities Division’s operating profit margin was slightly lower at only 2.34%. It should be noted that other large construction companies are also achieving similarly low profit margins. For example, Costain’s group operating profit margin was only 2.0% in 2009, and Balfour Beatty’s profit margin dropped from 2.0% to 1.5% in the first half of 2010.
2.0 Terms of reference

I have been appointed to write a report to the Commercial Director of the Sports Facilities Division which prioritises, analyses and evaluates the issues facing this division of BZCS and makes appropriate recommendations.

I have also been asked to draft an email to the Commercial Director of the Sports Facilities Division, on the advantages and disadvantages of attempting to complete the Binnet City sports complex project before end December 2011, together with my recommendation on this issue. This is included in Appendix 7 to this report.

3.0 Prioritisation of the issues facing the Sports Facilities Division of BZCS

3.1 Top priority – Sports complex project running late

The top priority is that the project has been identified as running late. The critical path shows that there is a further 51 weeks of work to be done. Therefore the project will not be complete until week 8 of 2012, which is after the deadline date of 31 December 2011. BZCS will incur the late delivery penalty of €3.0 million plus further penalties of €0.1 m for each week it is late, resulting in a total penalty payment of €3.8 million if BZCS delivers this sports complex in week 8 of 2012. BZCS could use additional manpower resources to help complete this project on time and this is the second priority below. If BZCS were to deliver the project late it would damage its reputation and may affect its ability to win future contracts.

3.2 Second priority – Proposal to use additional manpower resources

The second priority is considered to be the 3 proposals that BZCS could consider to use additional manpower resources to try to deliver the project by week 50 of 2011. However, these are expensive options but will prevent BZCS from incurring the contractual late penalty charges.

3.3 Third priority – Procurement issues

This is considered to be the third priority as the delay in placing the order for glass panels has delayed the project and could result in BZCS incurring late penalty charges. Also there is an urgent need to place orders for recycled materials and the wooden flooring to prevent further delays.

3.4 Fourth priority – Project management IT system

BZCS’s project management IT system, BZPM, is clearly inadequate at identifying and highlighting critical activities and has allowed the project to continue without highlighting to BZCS’s management that the order for glass panels had not been placed.

Notes:

1. It is possible that candidates may have discussed Priorities 1 and 2 together (the sports complex project running late and additional manpower resources) and this was acceptable in order to gain full marks within Prioritisation, as well as in Judgement and Logic.

2. High marks were awarded in Prioritisation if candidates clearly stated that the sports complex was running late and that significant penalties would be imposed, irrespective of the actual heading used within their Prioritisation statement.
A SWOT analysis summarising the strengths, weaknesses, opportunities and threats is shown in Appendix 1.

An extract from Mendelow’s analysis for BZCS is shown in Appendix 2.

4.0 Discussion of the issues facing the Sports Facilities Division of BZCS

4.1 Overview

The Sports Facilities Division of BZCS is a profitable division, with an operating profit of €3.4 million last financial year. The division is obviously busy and has many projects operational, including construction projects for the Olympic games, as there were no available Project Managers when the original Project Manager for the Binnet sports complex resigned.

With the recent re-organisation and the establishment of the new centralised Procurement Department, coupled with a shortage of Project Managers, this particular project has not been well managed and this will result in substantially lower profits from this contract with the local government of Binnet.

All of the BZCS divisions, including the Sports Facilities Division, has undergone change and had downsized its workforce and BZCS seems to have taken on projects without adequate project management staff. When the Project Manager for this sports complex project resigned, a replacement Project Manager should have been appointed immediately and handed over the project.

4.2 – Sports complex project running late

It has been established that the sports complex in the city of Binnet is running late. The critical path analysis shows that a further 51 weeks of work is required.

Appendix 3 to this report shows a comparison of latest forecast revenues, costs and profits against the original plan. This shows that contract profit of €6.4 million has fallen to €2.1 million as a result of the project running late.

Appendix 4 to this report shows that this will result in the sports complex being completed by the end of week 8 of 2012 unless action is taken to bring the project forward.

There has been poor management of this project, resulting in the order for the glass panels not being placed and this has caused a delay to the project. With the changeover to the new centralised Procurement Department and the resignation of the original Project Manager, this key order was not placed.

This project is a straightforward building project which has been badly managed and this will result in reduced profits due to either penalties being imposed or additional manpower costs in order to complete the sports complex on time.

BZCS is on a fixed price contract with penalties for late delivery. There is an urgent need to get the project under control or a penalty of €3 million for late delivery after 31 December 2011 will be imposed as well as further penalties of €0.1 million per week late. The latest critical path analysis shows that the project will be delivered in week 8 of 2012 resulting in total penalties of €3.8 million (€3.0 million plus 8 weeks late at €0.1 million per week).

The BZCS Sports Facilities Division’s Commercial Director could request the local government of Binnet for an extension to the deadline date, as the start of work had been delayed due to
delays in the selection of construction companies. However, BZCS signed a contract in September 2010 with the full knowledge of the penalty clauses for late delivery. Therefore it is unlikely that the local government of Binnet would waive the penalty payments for late delivery.

There is an urgent need to get this project under control and to make a clear decision as to whether to deliver the project late or to increase the manpower resources allocated to the project in order to deliver before the end of December 2011. Improved control is required and for critical dates to be flagged up to the Sports Facilities Division’s Commercial Director on a regular basis.

There appears to be too much dependency on Project Managers and the lack of management control of this project is disappointing.

Roger Pebble, the new Project Manager, has also identified an additional activity that is required. This is the installation of additional drainage at a cost of €0.9 million. This activity has further added to the project cost but this activity does not affect the delay to the project as this activity is not on the critical path. However, the drainage problem should have been identified at the survey stage before a fixed price quotation was submitted, so the responsibility for this error or oversight is BZCS’s. As this is a fixed price contract, this additional cost of €0.9 million immediately reduces the contract profitability.

It should be noted that BZCS’s Sports Facilities Division should ensure that all possible activities are fully surveyed and recorded to ensure that quotations for future projects, especially for fixed price contracts, are accurate.

4.3 – Proposal to use additional manpower resources

The Sports Facilities Division has 3 proposals to try to bring the completion date of the sports complex forward to meet the deadline of 31 December 2011. The critical path shows that the project will be completed in week 8 of 2012. This is 8 weeks late. However, it is not realistic to aim to deliver this by end of week 52 of 2011, as the penalty payment would be imposed if the sports complex is delivered only 1 day late. Therefore it is realistic to aim to complete the sports complex by the end of week 50 of 2011. Therefore, the division needs to use additional resources to bring the project forward by 10 weeks.

Alternatively, the Sports Facilities Division could decide to deliver this sports complex late and incur the penalty costs. This would result in not incurring higher employee and sub-contractor costs. However, this would impact its reputation in the longer term and possible failure to win bids in the future. The alternatives are late delivery penalties versus the cost of extra manpower.

The Sports Facilities Division of BZCS has 3 proposals to bring the project forward. These proposals and the costs associated with each of them are shown in Appendix 5. These proposals are discussed as follows:

Proposal 1- Working 7 days each week

This proposal is limited to working 7 days a week for a maximum of 22 weeks. This would therefore only generate 6 weeks (33 days / 5.5).

Therefore, doing this option alone is insufficient to bring the project forward by the required 10 weeks. Also it should be questioned whether BZCS’s workforce (employees and sub-contractors) could realistically work 7 days each week for 22 weeks. Hard work and tiredness could lead to poor workmanship, errors or even accidents. So this is not really realistic even for the maximum of 22 weeks.

The cost for this proposal for the maximum 22 weeks, which is equal to 6 weeks saved, is €1,980,000 as shown in Appendix 5. However, additional manpower would also be required to
bring forward the remaining 4 weeks at a cost of €350K per week. Therefore the total cost would be €3,380,000. This averages €338,000 per week over the 10 week period.

Proposal 2 – Overtime working

Proposal 2 is for the manpower currently on site to work overtime over the normal working week in order to bring the sports complex forward. The normal working week is 40 hours and this proposal is for all manpower (BZCS employees as well as all sub-contractors) to work an extra 11 hours each week. This represents an increase in working hours of 27.5% which is a substantial amount of overtime.

Furthermore, in order to bring the project forward by the required 10 weeks, there would be a need for 36.4 weeks of overtime working as shown in Appendix 5. It is now week 9 and the aim is to have the sports complex completed in 41 weeks time, by the end of week 50.

Therefore, this proposal of overtime working would be required for almost every week of the remaining year (36.4 weeks of the remaining 41 weeks).

The cost of this proposal is the highest at €3,640,000 based on 36.4 weeks of overtime, as shown in Appendix 5.

This Proposal of working overtime over the normal working week, carries the same risks and drawbacks as Proposal 1, working 7 days each week. Both of these proposals rely on employees and sub-contractors working long hours. This is far from ideal as the manpower cannot be expected to work under such pressure for over 36 weeks. This could lead to tiredness, ineffective working and even accidents.

This Proposal for overtime working could be kept in reserve if the project is still running late after a different proposal for additional manpower is allocated to the project.

Proposal 3 – Additional manpower

Proposal 3 is to bring in additional manpower on site, both employees and sub-contractors. This is the most realistic method to save 10 full weeks. The unseen material states mainly the use of sub-contractors. They would need to be incentivised to complete the project on time. It would not be worth employing more manpower and incurring an additional cost of €3.5 million (10 weeks at €350 K per week) if the deadline date is still missed.

Summary of proposals

The costs of all 3 alternatives without the proposed bonus are compared to the total cost of the possible penalty payments if the sports centre was not completed until week 8 of 2012, as follows:

<table>
<thead>
<tr>
<th></th>
<th>Penalty payments</th>
<th>Proposal 1 Working 7 days each week</th>
<th>Proposal 2 Overtime working</th>
<th>Proposal 3 Additional manpower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost</td>
<td>€ million</td>
<td>€ million</td>
<td>€ million</td>
<td>€ million</td>
</tr>
<tr>
<td></td>
<td>3.800</td>
<td>3.380</td>
<td>3.640</td>
<td>3.500</td>
</tr>
</tbody>
</table>

As can be seen from the above summary table of costs, all 3 proposals cost less than the penalty payments that BZCS would incur if the sports complex was delivered late, before the possible bonus payment is considered. Therefore on face value, one of the 3 proposals, or a
mix of the alternative proposals, should be selected in order to try to deliver the sports complex by week 50 of 2011 and bringing the critical path forward by 10 weeks.

There is a proposal to pay all employees and sub-contractors a bonus of €200,000 in total if the sports complex were completed by week 50 of 2011. It would make sense to incentivise the employees and sub-contractors with a bonus, as there would always be the risk that over €3 million is spent on additional manpower under any of the 3 proposals, but that the sports centre still did not get completed on time. Even if the sports complex is delivered 1 week late, BZCS would incur penalties of €3.1 million, in addition to the €3 million + already incurred on additional manpower costs. This would be a disaster and would result in a loss for the project and clearly would not be acceptable to BZCS’s Board.

Therefore to minimise the risk of employees or sub-contractors allowing the completion date to slip further and for them to receive extra overtime payments, a bonus should be offered to encourage all manpower to try to get the sports complex finished by week 50 of 2011.

With the proposed bonus of €200,000, Proposal 1 (a mix of working 7 days each week and some additional manpower) and Proposal 3 (extra manpower) would still result in a lower total cost than the €3.8 million penalty. It is only Proposal 2 (overtime working) that would exceed the penalty, as this proposal with the bonus would cost €3.840 million.

Another important consideration is in terms of reputation and BZCS’s ability to win further work. It is important for BZCS to complete this sports complex project on time as failure to complete on time would damage its good reputation. Furthermore, using Proposals 1 or 3 would result in a lower cost, even with the bonus.

4.4 – Procurement issues

The new centralised Procurement Department for the whole of BZCS was established in January 2011. It appears that with the previous Project Manager leaving BZCS and the establishment of the new Procurement Department, the important order for glass panels was not placed. The failure to order the glass panels also raises a more general problem concerning the failure to identify critical supply items.

It is necessary for the glass panels to be ordered immediately. It is suggested that the BZCS Procurement Director speaks to this key supplier urgently and attempts to negotiate a shorter lead time and to offer a financial incentive to speed up delivery if at all possible. The proposed incentive should be equal to, or less than, the cost of additional manpower, which is between €338K and €364K for each week that the delivery can be brought forward.

The construction company Carillion has recently reduced its supplier base from 25,000 down to only 5,000 suppliers. This has also enabled it to demand a 25% discount on materials procured, due to volumes that it will procure and the commitment to work with this smaller number of key suppliers.

BZCS’s Procurement Director could consider a similar move to rationalise BZCS’s supplier base and to obtain higher bulk discounts.

Furthermore, what is more worrying is that the Project Management IT system, BZPM, showed that the order for the glass panels had been placed. This was misleading information. Only the Procurement Department should be able to update BZPM for orders placed as this is the department responsible for placing orders with contractors.

There appears to be a lack of co-ordination and communication between Project Managers and the new Procurement Department. This type of problem is not unusual after an internal re-organisation. Additionally, it could be that Project Managers simply do not know who to contact within the new Procurement Department and who is responsible for placing different types of orders, such as sub-contractors, normal building supplies and specialised orders, such as the glass panels.

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The Procurement Director should take steps to communicate to all Project Managers throughout BZCS explaining how the department is structured and giving full details of the new procurement procedures and contact details of all managers within the Procurement Department. It is further suggested that all critical orders that are showing as placed with the supplier in BZPM, is double checked with the relevant manager in the Procurement Department to ensure that all orders have been placed and that the glass panels order that had not been placed was a one-off error.

Perhaps it would be useful for each Project Manager to allocate 1 day to spend with the Procurement Department to double check all orders. The Procurement Department should ensure that all orders and relevant order numbers and delivery dates, and any changes to delivery dates, are updated and accurately held in BZPM.

It is suggested that there should be an investigation as to why the order for glass panels was not placed on time, so that lessons are learned for the future.

It has also been identified that the orders for recycled materials and wooden flooring have also not been placed for the Binnet sports complex. Unless orders are placed this week, then further delays will occur. The cost of each week’s delay could be around the weekly cost for Proposal 3, for additional manpower resources, at €350,000 per week. Therefore the urgency of placing these orders, so as not to further delay this project should be impressed on the Procurement Department.

It should also be investigated why the Procurement Department had not identified that the recycled materials and wooden flooring order had not been placed sooner.

The new centralised Procurement Department is clearly not working closely enough with the Project Managers or using BZPM to identify critical activities. There needs to be a better understanding of the use of critical path analysis by the Procurement Department, so that the ordering of materials does not affect the planned timescale for any project.

Procurement Department needs to try to place the order for the recycled materials and the wooden flooring this week to ensure that there are no further delays to this project.

There is a further problem with the contract for the safe disposal of site waste. The contract to dispose of soil and plant waste from sites has been changed from the usual sub-contractor Waste ZX to a new supplier called Earth YT. It is stated that Earth YT was appointed as they are charging BZCS a lower cost than Waste ZX.

However, with any new sub-contractor, BZCS should be supervising its activities to ensure that it is complying with the contract and not causing any damage with the waste soil. Clearly Earth YT has been appointed in January 2011 and it has not been monitored or checked on at all. The dumping of soil and plants is clearly not an acceptable business practice.

Following the investigation of the publicity that Earth YT has dumped soil and blocked the flow of water from a river leading to a lake, BZCS’s Public Relations and Marketing Director has established that the allegations are correct.

There are 2 aspects to this issue:

1. The business issue as to what actions BZCS should take with Earth YT
2. The ethical issue as to what actions BZCS should take in respect of the damage to the lake. This is dealt with in Ethics – see paragraph 5.3 below.

The Procurement Department of BZCS has a range of actions it should take. These include ensuring a trial period for new contracts, ensuring that the Procurement Department samples / monitors the actions of new contractors to ensure that contracted service level agreements are being achieved and with penalties for failure to meet contract specifications.
The problem with the waste damage to the lake is that this is near the City of Binnet and this could have implications for the Sports complex contract in this city. The Commercial Director of BZCS’s Sports Facilities Division should arrange to meet with the official from the local government department and discuss the problem and explain what actions BZCS intends to take.

4.5 – Project Management IT system (BZPM)

Clearly BZCS’s Project Management system, BZPM, is not fulfilling all of the objectives of a project management system as the Project Managers have not got confidence in the system. Furthermore, the Project Management system had not alerted management to the problems and delays with the Binnet sports complex project.

The BZPM only produces “monthly reports”. For a project management system to work effectively, it would be expected that reports should be produced on project progress at least on a weekly basis. The BZPM system currently does not show a delay in the sports complex project as it shows that the glass panels have been ordered, which is not true.

Additionally, BZPM sent a warning report and emails to the Project Manager that had left the company. Clearly, BZPM had not been updated for this key employee leaving.

The IT Department should have an integrated approach to all of its systems. When an employee leaves the company, the email address should be removed and a replacement email address of a colleague or supervisor should be input to BZPM. The warning emails showing a delay on the Binnet sports centre project were not picked up by anyone and the delay had not been alerted to BZCS’s Sports Facilities Division’s Commercial Director. All warning emails produced by BZPM could be also copied to the Sports Facilities Division’s Commercial Director to ensure that follow up action has been taken.

It is worrying that BZPM is showing that the glass panels have been ordered, when the order has not been placed. BZPM should not accept this information without a valid order number. The only department that should be authorised to update orders placed should be the Procurement Department. BZPM should be changed so as not to allow any other users, except the Procurement Department, to update new orders placed with immediate effect.

BZPM should not allow orders to be recorded as placed without a valid purchase order number. BZPM should not allow anyone, especially the Project Manager, to override the system.

The only way that BZPM should be updated for events, such as placement of orders or payments to suppliers should be the direct interface of data from BZCS’s other IT systems. It should be fully integrated.

Furthermore, the Procurement Department should immediately audit all orders in BZPM to ensure that they have been placed and that valid order numbers are in BZPM.

BZPM should produce weekly updates to the planned project time and budget and highlight any changes from plan. This should allow each of the Project Managers to monitor progress and take any action early in order to prevent delays to delivery date, or to bring the project back on budget.

In order for the Project Managers to gain confidence in the data held in BZPM, perhaps the Internal Audit Department could perform checks to ensure all costs (purchases, sub-contractors and salary costs of employees) are directly charged to the correct project number and activity within a project. Additionally, Internal Audit should perform checks to ensure that the value of purchases reconciles with the total charges transferred directly into BZPM.

There are many ways in which BZPM could be improved, and these include that BZPM should only be updated from data from other BZCS IT systems, such as the purchase ledger for...
payments, the purchase order system for new orders placed and the payroll system for the cost of employees chargeable to each project.

It is further suggested that all costs and resources and orders should be correctly coded at source, such as each purchase order or timesheet, to ensure that the correct project and activity within a project is charged.

There should not be any need for each Project Manager to keep his / her own records (whether manual or spreadsheets) for each project, as this is what BZPM should be providing to them. Therefore there is a clear need for closer liaison between all of the Project Managers and the IT Department, as well as more training on how to use BZPM. This should give the Project Managers more confidence in the use and effectiveness of the important IT system.

Therefore, in order for the crucial BZPM to be effective, and have the confidence of all of the Project Managers, BZPM should highlight immediately any delays identified and all cost variances from the original plan. For control reasons, BZPM should not allow anyone (especially Project Managers) to over-ride the system.

5.0 Ethical issues and recommendations on ethical issues

5.1 Range of ethical issues facing BZCS

There is a range of ethical issues that will be discussed and recommendations made, including the following:

1. Working longer hours
2. Damage to the lake caused by dumping of site waste of soil and plants

5.2 – Working longer hours

5.2.1 Why this is an ethical issue

If all of the employees and sub-contractors already on site are asked to work 7 days each week for a 22 week period (or an extra 11 hours work over a normal working week as overtime for possibly a 37 week period) then this would put the manpower under pressure. Stress or tiredness could lead to accidents or even ineffective working and lack of progress.

It is unreasonable for an employer to ask employees and sub-contractors to work such long hours over a long period of time. Occasional overtime is acceptable, but 7 day working for 22 weeks is a significant pressure. There is the assumption that each hour of overtime is as effective as the main working week. Possibly the work that is undertaken as overtime will not be as effective.

5.2.2 Recommendations for this ethical issue

If employees and sub-contractors are asked to work longer hours then additional paid rest periods and breaks should be given to try to prevent tiredness leading to possible accidents. Site supervisors should ensure that all aspects of work meet the required safety standards and no dangerous practices are allowed. Furthermore, it is recommended that working 7 days a week should not be allowed for 22 weeks in a row. Perhaps 4 weeks of 7 day a week working could be allowed, with a 2 week normal week, to allow manpower to recover from such long working hours.

Additionally, progress should be closely monitored to ensure that 7 day a week working is actually helping to bring forward the completion date and that employees and sub-contractors do not view this proposal as extra money and then not working effectively.
5.3 – Disposal of site waste

5.3.1 Why this is an ethical issue

BZCS’s new site waste contractor is a company called Earth YT, which removed waste soil and plants from its building sites. The soil and plants have apparently been dumped in a local lake and this has blocked the flow of water from the river leading to the lake. This is not a responsible way of disposing of soil and plants.

Furthermore, there is a further ethical aspect to this problem. BZCS’s PR and Marketing Director has confirmed that Earth YT is responsible, but he has stated that “BZCS should refuse to accept responsibility for the clearing up of the river and lake”. This is not an ethical way for BZCS to operate.

5.3.2 Recommendations for this ethical issue

It is recommended that BZCS’s investigation into the incorrect dumping of waste soil and plants by Earth YT is made public and that BZCS also shares the information it has with Earth YT and asks them to accept full responsibility.

It is recommended that BZCS should allow Earth YT 10 days to show its commitment to clearing up the dumped soil otherwise it will terminate the contract with Earth YT and seek compensation in order to clear the damage itself. It is also recommended that BZCS arranges to rectify the damage caused to the lake using any compensation paid by Earth YT.

It is recommended that BZCS re-appoints its previous waste contractor Waste ZX to clear all site waste, including soil and plants, and to ensure that it is disposed of in a safe and responsible manner.

It is further recommended that BZCS should audit its sub-contractors, especially newly appointed contractors, more closely.

6.0 Recommendations

6.1 – Sports complex project running late

6.1.1 Recommendation

It is recommended that BZCS’s Sports Facilities Division Commercial Director authorises the use of additional manpower resources in order to bring forward the delivery of the sports complex before the end of December 2011. It is recommended that proposal 3, bringing in extra manpower resources is used.

Improved accuracy of surveying for future projects is required as the need for additional drainage at a cost of €0.9 million was identified after the fixed price contract was signed.

6.1.2 Justification

It was BZCS’s errors and poor management of the project that has caused the project to run over the deadline date of 31 December 2011.

Additionally, late delivery will result in a total of €3.8 million in penalty payments (€3.0 for late delivery plus €0.8 m for the 8 weeks that the project is currently forecast to be late after week 52 of 2011).
6.1.3 Actions to be taken

Roger Pebble, the Project Manager, should ensure that the Procurement Department immediately orders the glass panels for the sports complex and that close contact with this key supplier is established to ensure that the new delivery date is met or brought forward, if possible.

Roger Pebble should also ensure that all remaining orders for the recycled materials and wooden flooring are placed this week so that no further delays are incurred.

Roger Pebble should discuss the problems and timescales with the Binnet local government to reassure the local government and to keep it fully informed, as well as explaining the actions that BZCS is planning to take to ensure that the sports complex will be delivered by week 52 at the latest.

The selection and justification of the choice of additional manpower is shown in the recommendation below.

6.2 – Proposal to use additional manpower resources

6.2.1 Recommendation

It is recommended that Proposal 3, bringing in additional manpower resources (mainly sub-contractors) is chosen, rather than Proposal 1, working 7 days each week, or Proposal 2, overtime working. The additional manpower should be selected and allocated to the project when the glass panels have been delivered in order to bring the project forward by 10 weeks.

It is recommended that a bonus is paid to all site workers (both employees and sub-contractors), including any additional workers, in order to incentivise them to deliver the sports complex by the end of week 50 of 2011.

6.2.2 Justification

There is a need to bring forward the completion of the sports complex to avoid the late penalty payments.

The additional cost of Proposal 3, to bring in additional manpower is €0.35 million per week for 10 weeks, which is €3.5 million total cost. This is €0.3 million less than the total penalty payments of €3.8 million. The cost of the bonus is €0.2 million, which will increase costs, but will keep the customer satisfied and protect BZCS’s reputation. It is also a slightly lower cost as this will cost €0.1 million less than the penalty payments that could otherwise be incurred.

Working 7 days each week or overtime working is not a good way to run a project for such a length of time and could lead to errors or accidents. It would be difficult for employees and sub-contractors to work 7 days a week for 22 weeks in a row or overtime for 36.4 weeks in a row. However, in the construction industry long working hours and regular overtime is often accepted.

The ideal solution is Proposal 3, which is to bring in additional manpower.

6.2.3 Actions to be taken

The Project Manager to get firm quotes for additional manpower from sub-contractors and for additional employees that may become free from other BZCS projects.

Additional manpower (employees and sub-contractors) should commence work on site when the glass panels have been fitted. Until that point on the critical path, time cannot be saved.

All workers on the sports complex project should be briefed about the need to finish by week 50 of 2011.
The Project Manager, Roger Pebble, should also advise all workers on site, both employees and sub-contractors, that there will be a bonus totalling €0.2 million that will be shared by all workers on site if the sports complex is fully completed by week 50 of 2011.

The Project Manager should closely monitor the project progress and communicate progress to all site workers. The critical path should be updated and closely monitored on a weekly basis to ensure that no further delays are incurred.

6.3 - Procurement issues

6.3.1 Recommendation

It is recommended that The Procurement Director, together with the Project Manager, ensures that the order for the glass panels is placed ASAP.

The Procurement Director should ensure that the orders for recycled materials and wooden flooring are placed this week to ensure that there are no further delays.

It is also recommended that the contract with Earth YT for the disposal of waste soil and plants, is terminated immediately and that Waste ZX is re-appointed, assuming that this is acceptable to Waste ZX.

6.3.2 Justification

The glass panels must be ordered immediately to ensure that there are no further delays to the critical path of this project.

The orders for recycled materials and wooden flooring must be placed this week to ensure that no further delays. Each week of delay could result in additional manpower costs of around €350,000 per week or possibly the €3.0 million penalty.

The dumping of waste soil and plants by Earth YT is not acceptable and urgent action is required.

6.3.3 Actions to be taken

The Procurement Department is a service centre for all of the 6 divisions of BZCS. It is now a centralised department, following the re-organisation on 1 January 2011. However, it does not appear to be offering a good service to the divisions. In respect of the Sports Facilities Division, it has failed to identify that the glass panels were not ordered. The Procurement Department has also not placed the orders for recycled materials and wooden flooring. Additionally the new, cheaper, contract with Earth YT has resulted in soil being dumped causing damage to a lake.

The Procurement Director must work closer with each of the Project Managers to ensure that time critical contracts are placed in adequate time and do not cause delays to the project. From 1 January 2011, the Procurement Department is responsible for placing orders, and no one should have assumed that the important order for glass panels had been placed. There is a need to establish a closer liaison with key suppliers.

The Procurement Director must also take immediate action with the new site waste disposal contractor for soil and plants. He must insist that Earth YT immediately agrees to clear the damage to the lake caused by dumped soil and that if it has not been cleared within 2 weeks, then BZCS will impose penalties for failure to complete the contract or sue the company.
Furthermore, BZCS should explain how dissatisfied it is and that it is seriously considering terminating this new contract.

In the meantime, BZCS should seek to clarify whether Waste ZX would be willing to take back the contract for the disposal of site soil and plants. If Waste ZX is willing, it is recommended that the contract with Earth YT is terminated.

It is also recommended that the Procurement Department should be more active with conducting audits of contractors and suppliers performance, especially newly appointed suppliers.

6.4 – Project Management IT system

6.4.1 Recommendation

The integrity of data help in BZPM is crucial for effective management of all projects throughout all of BZCS’s divisions. It is therefore recommended that data on purchases and orders should not be input manually, but should be electronically transferred from other BZCS IT systems such as purchase order system and purchase ledger system.

There is a need for the IT Manager to survey users’ needs and to find out what their complaints are and whether they are using the system correctly, or whether the system is not fit for its purpose. Depending on the scale of the problem, it may require additional training for users, or at the other extreme, may need to be replaced. It is important that all Project Managers start to have confidence in using the system and do not see a need to keep their own records.

BZPM should produce weekly reports (not monthly) and all variances from plan should be clearly highlighted and emails generated to inform the relevant Project Manager and also the Commercial Director of the relevant division.

The Commercial Director of the Sports Facilities Division should have ensured that the key role of Project Manager for the Binnet sports complex was filled, even if on a temporary basis, rather than allowing the project to drift. Therefore the delay and the additional cost of extra resources to complete the project on time and the lack of identification of the delay is due to inadequate management of this project. Therefore, aside from IT system improvements, it is recommended that all projects should have a named Project Manager.

6.4.2 Justification

Only the Project Manager and his administrative staff should have access to input data, but there should be a block to ensure data cannot be changed or manipulated. Only certain data items should be input, such as planned data and forecast data and details of other information, such as quotes from sub-contractors.

The integrity and accuracy of actual information in BZPM should not be in question. It is necessary for BZPM to hold all relevant data relating to the contract, contract changes and approval of any changes to the contract. All actual data should originate from other BZCS IT systems. The critical path and time taken to undertake activities should not be changed manually, but should be produced by BZPM based on the data held within the system.

6.4.3 Actions to be taken

BZPM should be checked by BZCS’s Internal Audit Department, or perhaps by BZCS’s external auditors, to ensure that the procedures are secure and the integrity of the data is correct.

There is a need for meetings between the IT Manager and Project Managers to discuss the problems and their concerns surrounding the data held in BZPM. It may be necessary for training in the use of BZPM to ensure effective use.
If this crucial system is inadequate to manage the projects that the company is undertaking, then the IT Manager should review alternative Project Management software packages that are commercially available.

The IT Department should review all active email addresses within BZPM to ensure that they are up to date and exclude any employees who have left the company.

There is a need for all Project Managers to hand over a project to the new incoming Project Manager, when a change of Project Manager occurs during a project and all email addresses in BZPM should be updated.

The Procurement Department should immediately audit all orders in BZPM to ensure that they have been placed and that valid order numbers are in BZPM.

BZPM should produce weekly updates to the planned project time and budget and highlight any changes from plan.

Internal Audit should check the accuracy of costs charged to each project and activity within a project.

The IT Department should ensure that all Project Managers have confidence in BZPM so that their use of manual records is eliminated.

7.0 Conclusions

BZCS Sports Facilities Division is a profitable division of BZCS which generated over 11% of revenues in the last financial year. However, with the challenges of Olympic Games projects, the division must not become complacent. Good management supported by strong IT solutions are necessary to ensure contracts are delivered on time and to budget.

With additional manpower resources allocated to the sports complex in the City of Binnet, BZCS’s Sports Facilities Division should be able to deliver the project on time, albeit at a lower level of profit.
## Appendix 1

### SWOT analysis for the Sports Facilities Division of BZCS

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The Sports Facilities Division is a profitable division of BZCS with an operating profit margin of 2.3% last financial year</td>
<td>- Lack of handover of sports complex in Binnet when Project Manager resigned</td>
</tr>
<tr>
<td>- Support and funding from parent company BeeZed</td>
<td>- Project Manager left after serving only 1 month’s notice</td>
</tr>
<tr>
<td>- Reputation for quality construction</td>
<td>- Weak BZPM Project Management IT system - which had not identified the project as running late</td>
</tr>
<tr>
<td>- Strong safety culture and CSR ethic</td>
<td>- Shortage of Project Managers in Sports Facilities Division of BZCS</td>
</tr>
<tr>
<td>- Comprehensive CSR statement of initiatives</td>
<td>- Order for glass panels for sports complex not placed due to confusion</td>
</tr>
<tr>
<td></td>
<td>- Procurement problems – other materials not yet ordered</td>
</tr>
<tr>
<td></td>
<td>- Delays to the completion of the sports complex project</td>
</tr>
<tr>
<td></td>
<td>- Drainage problem not identified before fixed price contract was signed</td>
</tr>
<tr>
<td></td>
<td>- Project Management IT system (BZPM) has faults and the Project Manager’s lack confidence in it</td>
</tr>
<tr>
<td></td>
<td>- Project Managers’ keep their own records and do not use BZPM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Profitable contract for sports complex in Binnet</td>
<td>- Penalties for late delivery of Binnet sports complex</td>
</tr>
<tr>
<td>- Skills of new Project Manager</td>
<td>- Damage to BZCS’s reputation if Binnet sports complex is delivered late and possible loss of future contracts</td>
</tr>
<tr>
<td>- Savings from new centralised Procurement Department</td>
<td>- Poor Project Management IT system which had not identified or escalated the threat of late delivery of Binnet sports complex</td>
</tr>
<tr>
<td>- To use additional manpower resources to deliver sports complex in Binnet before end December 2011</td>
<td>- Damage to BZCS’s reputation from damage to lake caused by new waste contractor Earth YT</td>
</tr>
<tr>
<td>- To offer a bonus to employees and sub-contractors to deliver by week 50 of 2011</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
The above SWOT analysis is detailed for teaching purposes. However, in exam conditions a SWOT containing fewer bullet points, which cover the main issues from the case and the unseen material, is expected.
Extract from Mendelow’s stakeholder analysis

High power and high interest (the key players)

- The customer, and in particular the European governments, who are reducing their capital budgets and are seeking better value for money.
- The local government of the city of Binnet.
- BZCS and its competitors who are struggling with low profit margins especially at a time of recession in the construction industry.
- BZCS’s Project Managers, BZCS’s Procurement Director and the BZCS IT Manager.
- The role of Project Manager is crucial to the effectiveness of BZCS Sports Facilities Division.
### Appendix 3

**Binnet Sports complex** -
**Comparison of latest forecast revenues, costs and profits to original plan**

<table>
<thead>
<tr>
<th></th>
<th>Original contract</th>
<th>Latest forecast</th>
<th>Change from original contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract revenue</td>
<td>€64.0 million</td>
<td>€64.0 million</td>
<td></td>
</tr>
<tr>
<td>Penalty - for late delivery</td>
<td>0</td>
<td>(€3.0 million)</td>
<td></td>
</tr>
<tr>
<td>Penalty - €0.1 m for each week late (8 weeks late)</td>
<td>0</td>
<td>(€0.8 million)</td>
<td></td>
</tr>
<tr>
<td>Total revenue</td>
<td>€64.0 million</td>
<td>€60.2 million</td>
<td>(€3.8 million)</td>
</tr>
<tr>
<td>Costs:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To date</td>
<td></td>
<td>€16.4 million</td>
<td></td>
</tr>
<tr>
<td>Forecast to end contract</td>
<td>€57.6 million</td>
<td>€41.7 million</td>
<td></td>
</tr>
<tr>
<td>Total costs</td>
<td>€57.6 million</td>
<td>€58.1 million</td>
<td>(€0.5 million)</td>
</tr>
<tr>
<td>Profit</td>
<td>€6.4 million</td>
<td>€2.1 million</td>
<td>(€4.3 million)</td>
</tr>
<tr>
<td>Profit % (based on contract revenues)</td>
<td>10.0%</td>
<td>3.3%</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4

Calculation of when the Binnet sports complex will be delivered and the number of weeks that it needs to be brought forward

Critical path analysis shows a forecast of 51 weeks of work still to be undertaken from the end of week 9.

Therefore:

Week 9 plus 51 weeks of work = work will be completed at week 60 = week 8 of 2012.

Therefore, in order to deliver the completed Sports complex by the end of week 50 in 2011, the project needs to be brought forward by 10 weeks.
Appendix 5

Evaluation of the cost of alternative additional manpower resources

Calculations for the 3 proposals to use additional manpower resources:

Proposal 1 – Working 7 days each week

The maximum number of weeks for this alternative is 22 weeks generating an additional 1.5 days each week.

This would save 6 full weeks ( (22 weeks x 1.5 days) / 5.5 days per week for usual working)

In order to save the 10 weeks to deliver the project by the end of week 50, then Proposal 3 for additional manpower resources would be required as well for the remaining 4 weeks.

<table>
<thead>
<tr>
<th>No of weeks</th>
<th>Cost per week €’000</th>
<th>Total cost €’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal 1</td>
<td>22</td>
<td>90</td>
</tr>
<tr>
<td>Proposal 3</td>
<td>4</td>
<td>350</td>
</tr>
<tr>
<td>Total cost</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Proposal 2 – Overtime working

No maximum limit. Therefore, overtime working generates 11 hours each week over the usual working week of 40 hours = 11 / 40 = 0.275 weeks for each week of overtime.

Number of weeks required = 10 weeks.
Therefore overtime required for 36.4 weeks (10 weeks / 0.275 weeks)

<table>
<thead>
<tr>
<th>No of weeks</th>
<th>Cost per week €’000</th>
<th>Total cost €’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal 2</td>
<td>36.4</td>
<td>100</td>
</tr>
</tbody>
</table>

Proposal 3 – Additional manpower

<table>
<thead>
<tr>
<th>No of weeks</th>
<th>Cost per week €’000</th>
<th>Total cost €’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal 3</td>
<td>10</td>
<td>350</td>
</tr>
</tbody>
</table>
## Appendix 6

The revised profit for the project for each of the 3 proposals with, and without, the proposed bonus

<table>
<thead>
<tr>
<th></th>
<th>Latest forecast</th>
<th>Proposal 1 Working 7 days each week</th>
<th>Proposal 2 Overtime working</th>
<th>Proposal 3 Additional manpower</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>€ million</td>
<td>€ million</td>
<td>€ million</td>
<td>€ million</td>
</tr>
<tr>
<td>Contract revenue</td>
<td>64.00</td>
<td>64.00</td>
<td>64.00</td>
<td>64.00</td>
</tr>
<tr>
<td>Penalty for late delivery</td>
<td>(3.00)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Penalty for each week late</td>
<td>(0.80)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total revenue</td>
<td>60.20</td>
<td>64.00</td>
<td>64.00</td>
<td>64.00</td>
</tr>
<tr>
<td>Costs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To date</td>
<td>16.40</td>
<td>16.40</td>
<td>16.40</td>
<td>16.40</td>
</tr>
<tr>
<td>Forecast</td>
<td>41.70</td>
<td>41.70</td>
<td>41.70</td>
<td>41.70</td>
</tr>
<tr>
<td>Cost of additional manpower</td>
<td>0</td>
<td>3.38</td>
<td>3.64</td>
<td>3.50</td>
</tr>
<tr>
<td>Total costs</td>
<td>58.10</td>
<td>61.48</td>
<td>61.74</td>
<td>61.60</td>
</tr>
<tr>
<td>Operating profit - without bonus</td>
<td>2.10</td>
<td>2.52</td>
<td>2.26</td>
<td>2.40</td>
</tr>
<tr>
<td>Profit % (based on contract revenues)</td>
<td>3.3%</td>
<td>3.9%</td>
<td>3.5%</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

| Bonus                  | 0               | 0.20                                 | 0.20                        | 0.20                          |
| Operating profit – with bonus | 2.10     | 2.32                                 | 2.06                        | 2.20                          |
| Profit % (based on contract revenues) | 3.3% | 3.6%                                 | 3.2%                        | 3.4%                          |

| Average cost of additional manpower costs per week €’000 | 0 | 338 | 364 | 350 |
Email on the advantages and disadvantages of attempting to complete the Binnet City sports complex project before end December 2011

To: Commercial Director of the Sports Facilities Division
From: Management Accountant
Date: 1 March 2011

Re: Binnet City sports complex

1. I am emailing you with my analysis of the City of Binnet sports complex, which shows that the current forecast completion date is week 8 in 2012, which is 8 weeks after the contract deadline date, resulting in BZCS incurring late delivery penalties totalling €3.8 million.

2. Poor management of the contract to date, as well as the lack of a Project Manager for the last 4 weeks have resulted in slippage from the original contract completion date and the order for glass panels for the sports complex has not yet been placed.

Advantages of attempting to complete the sports complex on time:
3. BZCS fulfils its contract and does not incur the late penalty charges
4. The local population of Binnet are not left without a sports complex for 8 weeks (as the current complex has to close by 31 December 2011)
5. BZCS’s reputation for on time delivery is not affected

Disadvantages of attempting to complete the sports complex on time:
6. The planned profit was €6.4 million (10% return on revenue) but this will now be reduced by the cost of the additional manpower
7. The project will achieve a lower level of profit than originally planned, at between €2.26 million and €2.52 million (before bonus) depending on which of the 3 proposals for additional manpower resources is used.
8. It is still possible that BZCS could incur additional costs for extra manpower resources but could still incur further delays in completing the project and therefore incur the penalties for late delivery.

Recommendation:
9. It is recommended that additional manpower resources are allocated to the sports complex project in order to try to deliver it 10 weeks earlier than the latest forecast and that a bonus is paid to all employees and sub-contractors to ensure their commitment to deliver by week 50 in 2011.
10. The forecast profit for the contract would therefore be €2.20 m. It is important that after incurring additional manpower costs, that the project is closely managed so that no further slippage occurs, as any late penalty payments could turn the project into a loss.

Regards

Management Accountant

Note:
The above 10 sentences are slightly more detailed for teaching purposes and in exam conditions brief sentences are expected.