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ASSIGNMENT 2

SOE11151 STRATEGIC PROJECT RISK MANAGEMENT

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Executive summary

This project report concerns a risk management-based learning consideration accounting for focussing on a real-life scenario. The real-life scenario thus chosen is London's cross rail project which is considered as the UK's largest project by far. The main contractor involved in the completion of the Crossrail projects is Canary Wharf Contractors (CWC) which is a business owned by Canary Wharf Group involved in various activities other than construction.

The stakeholder identification of the project involves multiple internal and external stakeholders. A detailed evaluation of their prioritisation and effect has been evaluated basing the real-life project scenario. Being a big project, a large number of risks has also been identified and relevant recommendations have been made as well with supporting evidence. Finally, a conclusion has been drawn relating with the gist of findings.

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1. Introduction

Risk management refers to the process where the risks associated with the business operation are addressed and strategies are implemented to resolve these risks. It plays an important role in order to keep the execution of the project on track as well as to meet the organisational goal. The current report sheds light on the cross rail project under the organisation Canary Wharf Contractors (CWC). This study is going to highlight the overview of the project, and the strategic risks associated with the project. A further illustration of the risk management plan and the sustainable practice that can be used by this project helps to gain a broader understanding of the relationship between corporate governance and strategic risk management.

2. Background of the organisations

The main contractor subjected to UK Crossrail projects is Canary Wharf Contractors (CWC). It is a business owned by the Canary Wharf Group and has taken up most of the projects in the Canary Wharf area. The Canary Wharf Group works through sharing of information and knowledge through a wide range of sectors including ***construction, planning, development and facility management practices***. Having their headquarters in London and offices in Europe's major cities, the company has overseen a large number of regeneration projects throughout Europe. They primarily deliver high quality buildings and infrastructure. They have a multidisciplinary employee team having delivered about 8.5 million sq. ft of office space development, 3,000 new homes and £3.8 billion pipeline development projects so far (Asite.com, (023). They act as both project manager and main contractor in several high value projects.

As per their own words they are the ***largest urban regeneration developer in Europe***. Their LinkedIn page indicates the company having approx. 201-500 employees (Uk.linkedin.com, 2023). Established in 1989, the company has grown exponentially over the years and are currently offering management of 9 million sq. Ft of mixed-use space and about 1,100 build-to-rent apartments. Their current goal is to incorporate 'smart city technologies' along their proposed current project and develop a suitable urban environment around the *Elizabeth line*. Due to the pandemic situation the revenue investment process of CWC has been slow. Their total revenue for 2021 was seen at £419.7m. Whereas in 2020 it was £426.8m. Their office rental income also has dropped by £0.6m in 2021 as well (Group.canarywharf.com, 2023). Their current tenants include Amazon Fresh, Wood Wharf, Hawksmoor and such others.

3. Project overview

3.1 Project Outline

The Cross rail project, one of the largest construction projects in England, plays an important role in delivering the railway of Elizabeth East-West to London city. The initial services associated with the Cross rail project starts from the year 2018 and the railway line starts working finally from 2019. The Cross rail Act (2008) which was submitted to the British parliament in the year 2005, provides the authority to build the project. The agreement of the development was planted with different stakeholders of the Cross rail project that includes Network Rail, CWC group, and London Underground (reuters.com, 2022). The Cross rail project implemented the formulation of 10 new stations and tunnels that are 42 km long.

The overall length considering the underground and over ground is almost 118 km. The Cross rail project creates a connection between Heathrow Airport and London City. The funding for the project was £15.8 billion; however, the plantation of this project enabled it to gain a net profit of almost £42 billion (crossrail.co.uk, 2023). It primarily stretches all over Heathrow, Maidenhead, and Reading the part of the west to the cities in the East that includes Abbeywood, London. The primary goals of the plantation of the cross rail project include the mitigation of over-crowdedness from the train as well as the underground services as well as to enhance the capacity of the rail stations by almost 10% (crossrail.co.uk, 2023). Annually, the cross rail offers almost 200 million people the opportunity to travel through them.

The cross rail project is actually generated as the subdivision of Transport for London (TFL) where the funding of the project was 40% by the government and 60% by the TFL. Since in 2010, the funding of the project was £14.8 billion, it required additional funding in the year 2018 due to the cost overrun issue of the project (crossrail.co.uk, 2023). Stakeholders that are required for the execution of the project involve external consultants who are engaged to solve the external issues of the project, and expert committees who are responsible to manage the procurement (Whyte, 2019). This project formulates the CDE concept along with the BIM that helps in designing the innovative engineering of reducing the occurrences of waste. As per the views of Denicol *et al*. (2021), these engineering designs are beneficial in order to minimise the costs associated with the maintenance of the cross-rail in a future context. Innovate 18 was also formulated under the concerned project that acts as a platform to share a piece of in-depth information to the diverse community. A list of mechanisms is given by the selected project that helps flourishing the technology, bringing innovation, and developing the process (crossrail.co.uk, 2023). The project has a large impact on the UK economy as it offers almost 55,000 jobs to the local people of the UK, and offers almost 90,000 homes to stay for the people.

3.2 Cost planning

Resources	Cost (£)
Registration cost	1 billion
Safety testing and signaling cost	2 billion
Licensing cost	2.8 billion
Labour cost	3 billion
Cost of electrical infrastructure	3 billion
Cost of mechanical infrastructure	4 billion
The total cost of establishment	£15.8 billion

Table 1: Cost planning of cross rail

(Source: Self-created)

The registration cost required for the cross rail project includes 1 billion. The licensing cost that was required for the complete plantation of the project involves 2.8 billion pounds. 3 billion pounds was required as the labour cost. 3 billion was required for the electrical infrastructure, and 4 billion pounds was required for the building of mechanical infrastructure for the project. In the initial stages, it has been estimated that the cost was of £14.8 billion, whereas the delay issue associated with signaling and safety increases the cost of production. This cost overrun caused a serious impact on the budget that made the project be open late for almost 4 years.

3.3 Scheduling

Activities	2005-2007	2007-2010	2011-2014	2015-2018	2019
Initiation					
Planning					
Execution					
Monitoring and controlling					
Closure					

Table 2: Scheduling plan

(Source: Self-created)

It has been observed from the scheduling table that Cross rail project initiates since the year 2005 when the plan for the project was submitted. It took almost 2 years to initiate the Cross rail project. In context to planning, it has been observed that it took almost 2007 to 2010 to

make the planning of the project for the Cross rail project. The budget and scheduling planning were done before that time. However, the budget plan fails due to the signaling issue and the safety training. The execution of the project requires the project to be worked into action (cipd.co.uk, 2023). In this process of project execution, the actions of the team members are managed and are tracked. Proper communication is built up within the project to facilitate the execution of the project (cipd.co.uk, 2023). It has been identified that post the execution process within the time span of 2015 till 2018 the monitoring phase has commenced. During this period of time, the project manager of the cross rail project has been emphasizing the process of aim management. Revisiting the initiation phase and execution phase, the manager has been re-evaluating the success rate of the project success. In the year 2019, the Cross rail project finally closes and starts to operate in London.

3.4 Stakeholder engagement planning

A stakeholder engagement planning and management is done to determine the level of involvement and influence of the stakeholders in a particular project. With the evaluation of involvement of stakeholders, a proper communication plan can be developed and executed based on establishing a proper work relationship developed between them (Pedrini and Ferri, 2019). The Crossrail project undertaken by CWC is subjected to a large UK area and a number of cities. Thus, all the businesses, people, the government, other railway bodies all are potential stakeholders of the large project. The stakeholders involved in development of the Crossrail project, specifically the Elizabeth line includes:

Stakeholders	Nature	Requirement	Responsibility	Impact	Influence
Future passengers	Internal	Need to travel in a specific area as quickly as possible and also to rescue the cost of transportation.	Ensuring cleanliness and safety of the railway premises.	High	High
Crossrail employee	Internal	Employment safety and security from the authorities	Providing a good service to the customers	Moderate	Low

Transport for London (TfL) and the Department for Transport (DfT)	Internal	Evaluating the need of different areas in quick transport and public opinion about form of transport	Ensuring proper placement of the transport services with proper form of transport	High	High
City businesses	External	Need to run on time and generate profit	To match business objectives and goals with ethical transportation practices.	Low	Moderate
Local authorities	External	Need to rescue cost and time of transportation	Need to maintain law and ethics in the transportation services	High	High
Local politicians	External	Need to rescue cost and time of transportation and maintain businesses	Ensuring proper maintenance of transportation law and maintaining connection of local operations with transport	Moderate	Moderate
Impacted communities	External	Need to travel far and fast with reduced costs	To spread the word about good practices of Crossrail transportation	Moderate	Low
Other	External	Wants to develop a	To align services	Low	Moder

railway bodies		better transportation channel and complete	with Crossrail services concerning the main goal of customer service		ate
The government	External	Need safety, security and cost reduction in transport while maintaining local businesses	To declare and maintain laws and policies for convenience of both passengers and the railway authority.	High	High

Table 1: Stakeholder identification of Crossrail project

(Source: Inspired by Pracademy.co.uk, 2023)

Based on the stakeholder identification chart of the Crossrail project, the CWC prioritises their stakeholders to ensure proper engagement. A stakeholder mapping matrix may provide a better view of Crossrail project stakeholders and their interests.

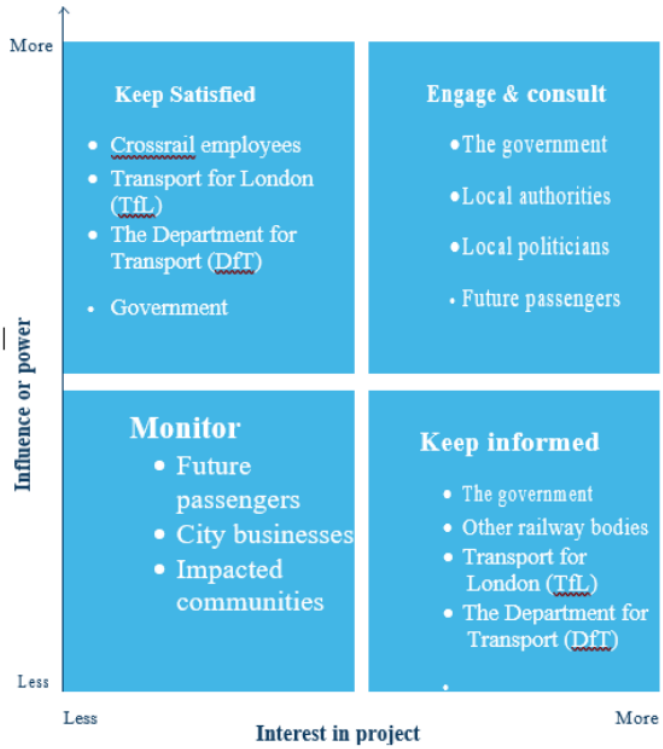

Figure 1: Stakeholder mapping

(Source: self-developed)

The stakeholder matrix has been developed in two dimensions including interest in the project and influence of their power. Based on that the stakeholders have been divided into four categories, keeping satisfied, engaging and consulting, monitoring and keeping informed. In this case the government bodies and the local authorities, as well as the transport departments are the ones who should always be kept informed about the activities. Monitoring is done on passenger needs and city businesses as well as impacted communities to ensure the understanding of preferences. For the consideration of engagement and consultations the government, local authorities and politicians are considered. Finally, stakeholders such as the employees, the transport authorities and the governments also have to be kept satisfied for proper completion and running of the project.

3.5 Project execution phases

The start of the actuarial Crossrail project actually occurred in December 2008. The real momentum of planning for the project however started in 2001. In December 2008, the lands for building the project were acquired and the phase planning initiated. At that time, such a project was the most completed project in the UK. In May, 2009, the formal start of the construction project was marked and Canary Wharf attached themselves in the project collaborating with the mayor of London and the rail minister (Tfl.gov.uk, 2023). The entire Crossrail project compilation was expected to be completed in three phases.

The project was initially announced with £14.8 billion revenue having 10 new stations and also connecting 30 existing network rail stations in the outer London area. Tunnelling for the project began in 2012 with eight 1,000 ton tunnelling machines. A total of 42 km of tunnel had to be completed, having 6.2 diameter of 6.2. The tunnelling process was completed entirely at Farringdon by May, 2015. A twin bore tunnel spanning 21 km was developed that expanded from Royal Oak in West London to the west end of the city and then split into two in the east London area (Barbourproductsearch.info, 2023). They stretched towards north-east and south-east and towards Pudding-mill Lane and Victoria dock respectively. The stations were about 250 to 300 metres in length and typically 30 metres under the ground level.

The main focus of the Crossrail project was the phase 2 project was to be named the ‘Elizabeth line’. The line however was completed in 2016, inaugurated by HM Queen Elizabeth II. However, the line was just opened and a full extension of the line was expected to be completed within 2022. After its opening in 2017, the services began to expand to west

of London. Lines between Paddington and Heathrow were started in the same project in 2018. This replaced the existing Heathrow Connect service and a part of the Great Western inner suburban service. Services between Paddington and Reading on the same line started in 2019. Within 2022, the line was fully opened with 10 stations (Tfl.gov.uk, 2023). This was considered the UK's most expensive archaeological construction programme.

The Elizabeth line was developed keeping seven principles in mind, identity, clarity, consistency, inclusivity, sustainability, security and people focus. Recent reports of Evening Standards acknowledges that the Crossrail project has been a game changer for Canary Wharf (Standard.co.uk, 2022). The finished project would give a 39-minute direct link to and from Heathrow airport. This would mean a great distance and time reduction for London's traffic.

4. Risk identification and management

4.1 Risk identification

The Crossrail project, similar to any contraction project, has specific risks related to work practices and business-related aspects. The risks identified in the project includes:

- Health and safety risks of the workers
- Funding and delivery related business risks
- Engineering and design related risks
- Logistics and interface related risks
- Environment-based risks
- Quality-based risks
- Business continuation risks and
- Fraud and other security related risks (Learninglegacy.crossrail.co.uk, 2023).

From an early stage, the industry recognized that identification and management of risks was critical for the success of the programme. Thus, for an early identification and management of risks three core objectives were taken. The first objective was to rescue the likelihood of potential events and consequences that could have a negative effect on the project. The second objective was to provide assurance to both external and internal stakeholders for better management of the risks (Learninglegacy.crossrail.co.uk, 2023). The third objective was to improve the decision-making process, planning and understanding all uncertainties.

As per a global business report, the Crossrail project faced bad decisions and poor planning-based risks. Published in 2019, the report says that the National Audit Office (NAO) criticised the Crossrail project for poor planning and bad decision making (Globalconstructionreview.com, 2019). The report said that due to poor planning and designing the costs of the 36 main contracts bumped into £2.5bn within a period between

2013 and 2018. Unforeseen clashes were seen between contractors working on different stations resulting in sudden system design changes leading to increase of costs. Other than that, the project failed to produce a detailed delivery plan by expected time in 2018. Thus, being a large project, several drawbacks and risks were seen.

4.2 Risk register

Risk	**Category**	**Details**	**Severity**	**Impact**	**Management**	**Responsible stakeholders**
Health and safety risks of the workers	Legal risks	The Workers can get injured due to faulty machinery and platforms	High	Moderate	Checking all the instruments and providing educational leadership in the operations. Determining better instrumental standards	Government, local authorities, managers
Funding and delivery related business risks	Financial risks	Planned funding may fall short due to disasters and delivery of project on time may not be possible	Moderate	High	Proper financial tracking in all parts of the project is essential in order to develop financial competence and in-time project delivery	Financial managers, supply chain managers
Engineering and design related risks	Technological risks	Instruments used may falter and design of the operations may not be adequate	High	High	Multiple team-based evaluation of planning and blueprint development of the work should be considered. Designs should be double-checked	Contractors, engineers

					thoroughly.	
Logistics and interface related risks	Technical risks	Supply chain might be disrupted due to conditions such as the pandemic	Low	Low	Constant monitoring of logistics should be considered along with thorough checking of steps in the supply chain to reduce effort and resources.	Supply chain managers
Environment-based risks	Strategic risk	Sudden environmental challenges such as the pandemic can hamper the workflow.	Low	Moderate	Alternative solutions of operations in times of environmental disasters should be considered and back-up plans for a safe work continuation should be accounted for.	Government, local authority, contactors
Quality-based risks	Competence risk	The qualities of the required raw materials might not be as expected due to unavailability of proper resources	Moderate	High	The quality of each of the materials should be thoroughly checked before usage and only high-quality materials are scheduled to be subjected. Material quality standards should be set for the project as well.	Engineers, managers
Business continuition risks	Technical risk	The individual contractors may not agree on same methods	Low	Moderate	All the tasks should be categorised and a connection between all tasks should be set while a common supervisor is assigned. A feedback	Managers, workers

		making a rise in conflict in the work			communication between each and every process is essential.	
Fraud and other security related risks	Competence risk	Fraud can occur with delivery of particular products, financial miscalculations and several other services.	Moderate	High	To minimise fraud, a systematic approach of monitoring and strict regulation creation is essential. Security in the workplace schedule can be increased with regular physical and digital checking of work.	Contractors, managers.

Table 2: Risk register

(Source: delf-developed)

4.3 Sustainable risk management recommendations

The risks identified are all risks seen in Crossrail project implementation. Potential solutions of these risks thus may also be similar with Crossrail's own consideration of mitigating these risks. In terms of health-related risk mitigation, first of all the workers can be given insurance support to cover their injury mitigation. They can provide health insurance benefits to their workers in case of unprecedented and sudden health risks occurring at the workplace (Campo et al. 2020). Other than that, the Crossrail project has to primarily rectify all the causes of injury risks such as faulty machinery and platforming related risks and maintain the quality of the items to avoid such risks in the first place.

In such a huge project, funding acquisition, distribution and usage related risks are bound to occur. A news report discussed in an early discussion shows that the Crossrail project has already been criticised due to such concerns where a sudden increase of funds was to be made due to incompetence (Globalconstructionreview.com, 2019). In this case, using financial software to keep track of all the fund allocations can prove to be helpful. Accounting softwares such as QuickBooks, Tally and Zero are easy to use and also offer a wide range of financial tracking and future planning functions (Maruschak, 2021). These softwares can present financial calculations, allocations and storage with both offline and online cloud based features, making them easy to use and available in the network as well. With these

software, timely and precise allocation of funds in the system can be made possible, reducing financial risks significantly.

Engineering and design related risks are severe risks and can affect the halting of the whole project. Engineering and design related risks mainly sign fines the fault in poor machinery use and poor planning of construction projects. Use of poor and faulty machinery can create catastrophic disasters in large operations regarding both human and material resource-based loss. Poor planning for the construction operations can lead to sudden collapse of the structures creating the same disasters as well. To prevent this, standard checking of the tools and other machinery is essential. Old and unreliable machinery should be made out of commission (Sui *et al*. 2019). On the other hand, construction designs should be thoroughly approved and checked by all engineers involved to ensure proper process of acceptance of designs.

5. Conclusion

Based on the overall discussions made about the Crossrail project taken up by Canary Wharf Contractors, it can be said that the project being almost complete was UK's largest project by far. This made the project being subjected to account for a lot of stakeholders and risks associated with a significant amount of internal and external environment-based variables. The £14.8 billion started way back in 2008 and is expected to be completed within 2023. The Elizabeth line, concerning the second phase of the project, is expected to be a game changer in London and Europe's transportation system while linking the whole of London in a single line. However, being such a big project, risks are bound to arise. These potential risks have been further evaluated and the potential solutions to these risks have also been presented in a brief manner. The project at near of its completion can learn from the recommendations and implement them in action for future concerns.

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