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Risk and Security Management: Stakeholder Project Failures Illuminated by an IED occurrence at a Hydro-Power Construction Project in Pakistan

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Abstract

Risk and security management is an important aspect of construction activities, especially in countries where the level of security is challenging. This paper is focused on evaluating the impacts of risk/security measures resulting from stakeholder failures related to explosives mismanagement and security events, over an 18-month period, on a large, complex Dam project in a remote area in Pakistan. In July 2021, an incident occurred that had huge ramifications for the risk/security management of a large dam construction site. A qualitative methodology was utilised, where content analysis was conducted on project documentary evidence and where the research design targeted a closed population of 12 - Engineer supervisors/managers to explore their personal opinions. The outcomes indicated that the Employer, the Engineer, WB group and contractors engage in destructive managerial behaviour considered primarily to reduce project performance and create unsafe project situations that were systemically induced. Further, stakeholders are not managing explosives or the security situation underpinning poor project physical progress, leading to consistent project failure issues.

Keywords: Risk management, Security management, Stakeholders, Explosives

1. Introduction

Complex projects often show severe project management difficulties associated with risk management (Thamhain, 2013; Cooper et al., 2005) which must be taken seriously and applied adequately (PMI, 2021). However, project success is founded on good project management practices (Cooke-Davies, 2002), collaboration between the stakeholders (Haas, 2009; Sandhu & Gunasekaran, 2004), problem solving (Cleden, 2009), and the proper application of project planning and strategy (Shenhar et al., 2007). Project success is also strengthened by adhering to contractual requirements and conducting risk management (Retfalvi, 2011). Further, risk management is considered crucial to manage the project scope,

quality, cost and schedule (Greiman, 2013).

1.1 Risk Management in Construction

An integral part of project management success factors is the management of risk (Benţa, Podean & Mircean, 2011; Wood and Ellis, 2001; Han, et al., 2008). Today, managers of every complex project are expected to undertake risk management through appropriate risk assessments (Lewis, 2008). Poor project performance has been attributed to the lack of appropriate application of risk management to complex projects (Olsson, 2008). This is where any risk is considered a barrier to project success (Hadjinicolaou & Dumrak, 2017). This means that identification, analysis and mitigation of risk is extremely important to the project success (Hertz & Thomas, 1994) and therefore through the design and implementation stages (Serpella, et al, 2014). Risk management is often conducted as part of a necessary integrated management plan (PMI, 2021) but is not always dealt with effectively (Mills, 2001).

1.2 Security Risk Management in Construction

Part of the risk management process according to the PMI (2021) is security management (Marle & Vidal, 2016). A growing interest is shown from the literature towards safety risk management and security management (Aven, 2007) mostly due to increased volatility and assessed vulnerability of working environments - for high risk, highly complex projects.

Most risk assessments conducted on a construction site are directed to mainly underpin safety management surveys (Hallowell et al., 2013). Further, these safety risk assessments often become routine in nature and offer planned data regarding safety outcomes and provide measures to establish planned structured safety precautions (Langford, Rowlinson, & Sawacha, 2000). Safety planning requires such safety related risk data in order to determine the level of risk and how to minimise/mitigate such identified risks through appropriate action plans (Aven, 2016; Sanchez, Robert & Pellerin, 2008).

However, security risk assessments are more likely to be specific for identifiable events (Wang, 2022). Taking notice of previous related security incidents would appear to be not only useful but necessary (Cozzani, Gubinelli, & Salzano, 2006). Safety vulnerabilities with multi-hazard coupling events are all too common today, as lessons are not learned and as one major hazard event concludes and another arises (Jaimes, Reinoso & Esteva, 2015) sometimes with increasing risk of project failure (Shore, 2008; Raz, Shenhar & Dvir, 2002; Sutterfield, Friday-Stroud & Shivers-Blackwell, 2006). For example, security events that require a response from security forces that have huge impacts on local communities and personnel and infrastructure at site. Attacks on Chinese personnel and assets continues to give cause for security concern in Pakistan (Alam et al., 2019; Riaz, Mi & Fernald, 2020; Reuters, 2021).

Conducting security assessments is a major undertaking that requires both knowledge, understanding and the development and implementation of serious investigations that impose on construction management activities. This is required under the Contract for contractors and WAPDA to fulfil. To date, the contractor’s situation remains poor, as if the IED attack had never occurred.

The number of serious recorded security incidents against Chinese nationals in Pakistan between 2001-2017, has been rationalised and assessed as:

Table 1. incidents against Chinese nationals in Pakistan between 2001-2017 (based on Syed, 2019; and Seyd, 2017):

Year	No. Incidents Recorded	Deaths/Injured	IED*
2017	6	15/6	1
2016	5	8/2	5
2015	1	4/-	-
2014	1	-/1	-
2013	3	11/4	2
2012	2	2/3	1
2008	1	2/-	-
2007	3	32/38	1
2006	1	4/-	-
2004	1	3/10	1
2001	1	1/3	-
Total	**25**	**82/67**	**11** (44%)

*IED - incident propagated by explosive device.

Table, 1 above, indicates quite clearly, that the risk to Chinese nationals should have had a continuing risk assessment conducted throughout the life-cycle of such projects (PMI, 2021; Alam, et al., 2019) within the context of each separate construction site that involved large numbers of Chinese contractors/nationals. In 2021, there were 4 attacks on Chinese workers (CPEC related) resulting in 17 killed and 34 injured (Pakistan Security Report, 2021). Whilst the number of security forces are known but remain small when compared to CPEC construction sites (not indicated for security reasons) there is little progress in meeting the needs of the whole construction site, as indicated security risk assessment conducted post-IED incident (Security Audit - Whole Site - Overall Outcomes - 31st Aug 2021).

1.3 Brief Project Background

Dam Project - Road/Tunnels/Bridges with 14 separate construction packages associated with the 3rd largest dam (243m high) project in the World, 75Kms roading, 8 road tunnels and 4 large bridges over 250m with over 11000 workers and managers engaged planned at its peak in mountainous terrain. Over 300 Chinese managers/engineers and workers engaged in the project construction. WB group (OHS Consultation) appears to have been used by WB to take over the project management by proxy. An e-mail from the WB on the 25th Dec 2021, stated clearly that the WB was a major stakeholder at the project. This means that the WB group should also abide by the donor requirements in terms of governance and behaviour expectations.

Due to the independently reported issues and problems at site, the purpose of this study was, "*to analyse available documentary evidence and to explore Engineer personnel views associated with the impact of risk and security management before and after an IED bus explosion, affecting the progress of a dam project in Pakistan*".

2. Methodology

Exploring the impacts, documentary evidence and personal experiences of security and risk management, on a large Dam project in Pakistan, requires a qualitative inquiry to examine

explicitly the issues raised (Marshall & Rossman, 2010; Hannes & Lockwood, 2021). The focus for the research is towards actual documentary evidence and subsequent personal opinions of the Engineer personnel. For the documentary evidence the scope and boundaries relate to site operations, WB group responses and wider stakeholder engagements - especially the Employer - WAPDA (Punch 2014).

For the individuals who are considered focused knowledge "carriers" (Tong, Sainsbury & Craig, 2007) arising from individual site Works experiences (Cassell & Symon, 2004). The research context and boundaries closely follow their perceptions of the project impact of the Employer's and stakeholder's risk and security managerial practices. The written evidence would indicate how project personnel reported on the security and risk problems at the site.

The qualitative research method employed a dualistic approach - documentary evidence assessment through content analysis (Kondracki, Wellman & Amundsson, 2002; Adams, Smart, & Huff, 2017) and an internally dynamic semi-structured interview process (James & James, 2011), which was further underpinned through an "inductive/theory building" approach (Glaser & Strauss, 1967).

Subsequently, the main research design used document review/analysis (Cassell, Cunliffe & Grandy, 2018) which is an important aspect of qualitative research (Lincoln & Guba, 1985) and is used here to support and provide elements of necessary triangulation (Leech & Onwuegbuzie, 2007). Documentary analysis creates informed meaning (James and James, 2011) substantiated through the written word (Rapley, 2007). These documents are often referred to as 'social facts' (Atkinson and Coffey, 1997) that offer tangible insights of the focus of the document discussion. The importance of the documents is, that they are not only judged on the issues surrounding their release, but what the organisation management does in response to their content. For the organisation management, the documents provide prima-facie evidence of management intentions and behaviour or lack of appropriate engagement (Hodder, 2000). Triangulation further ensures that ideas, notions and issues raised have some form of context that adds to their veracity and importance (Patton, 1990).

For the limited interview process, which would be used for confirmatory indications (Harris & Brown, 2010), the research design targeted a closed population of 12 - Engineer supervisors/managers described as the "population of interest" (Carman, 1990). Necessary interviews were conducted in English (Works Contract language) and took approximately 30 minutes each, and were digitally recorded with permission (Duranti, 2007) for review and analysis using qualitative software. The focus of the discussion was to clarify the documentary evidence previously assessed (Ritchie & Lewis, 2003). Not all documentation was seen by these individuals, and this was rationalised at the beginning of the interview. Each interview was transcribed and assessed as in the documentary section (Harris & Brown, 2010). All relevant interview dialogue was fully coded where the outcome characterised the informant's opinions through a progressive open-coding development (Buston, 1999).

The documentary evidence data was interrogated using qualitative software (after Bailey, 2008) and analysed through a procedure (Lewins & Silver, 2007), and each interview was initially manually and independently coded (Flick, 2022). This formed the themed outcomes through thematic analysis outcomes (Timmermans & Tavory, 2022; Humble & Radina, 2019).

The resultant themes were integrated out of the documentary evidence interrogation (Adu, 2019), where validity was improved through triangulation measures (Onwuegbuzie & Leech, 2007).

The developed narrative outcome substituted "reliability" (Strauss & Corbin, 1990) with "credibility" (Johnson, 1997) and "dependability" (Lincoln & Guba, 1985). The documentary evidence from the studied population reflected the project related experiences of the application of risk/security management and the negative impact of decisions associated with the major stakeholder practices (Lambsdorff, 1998). These were designed to help build an analysis in the "*interests of the public good*" and utilising a "…*good-faith effort to report wrongdoing*…" (Sinzdak, 2008) - as open as possible due to unethical management (Knoll, Schyns and Petersen, 2017). Further, given the security situation in Pakistan, there is a clear need to protect the locals and to prevent or mitigate the security situation, but the reporting in this paper is necessary as the level of protective culture is just not shown by the project management major stakeholders - WAPDA, WB or the Engineer.

The outcome of the analysis presents a robust outcome based on the confluence of written evidence (Stake, 1995) and personal interviews (Maxwell, 2013) directly representing informant experiences (Yin, 1994) at site and the approach utilised by Fereday and Muir-Cochrane (2006). Due to the sensitivity and impact of the security environment on the project, this approach is designed to raise appropriate contextual data to develop rich content and theory development (Cayla & Eckhardt, 2007). The results and discussion are taken together as the separation of such is common in qualitative research.

3. Results

The result is split between documentary summaries in the form of tables and legitimate extracts underpinning the opinion of Engineer staff to the various explosives and security events over about 18 months - May 2020-Nov 2021. (*All reports that were provided to the Engineer (date-stamped), directed at the Engineer management and illustrate the total lack of engagement in the risk and security requirements and the subsequent reporting advice which were also ignored in their entirety by the WAPDA and the WB group*). The discovery analysis for Explosives and security events is seen in Table 2, below as:

Table 2. Internal documents[1]show the Chronology and extent of the explosive's issues and Security events - May 2020-Nov 2021 for each contractor[1-2]

Date	Incident Type		
	Explosives	**Security**	**Deaths/ Injuries**
28th Nov 2021	Abandoned Explosives found at main site at river-side dumping site - **Contractor 1**		-/-
15th Nov 2021	Unattended and Improper Storage of Explosives and Detonators at Electric Station Construction Site - **Contractor 4**		
16th Sept 2021		Violent incident - Main Gate - Camp - between Chinese Engineer - Security personnel - **Contractor 3**	-/2
11th Sept 2021	Explosives mismanagement of explosives - Explosives Magazine audit - **Contractor 1**		
6th Sept 2021	Explosives mismanagement of explosives - Explosives Magazine audit - **Contractor 3**		
28th Aug 2021		Security Audit - Explosives Magazines	N/A

		- Explosives mismanagement of explosives - **Contractors 1, 2 and 4**	
17th Aug 2021		Driver Carrying Loaded Pistol While Driving an Engineer Vehicle at Site - Main offices - **Engineer**	N/A
30th July 2021		Full site - Contractor/Engineer Security Audit - **ALL Contractors**	N/A
14th July 2021		IED Bus Explosion - **Contractor 1**	14/32
13th July 2021	Explosives found during mucking out process - U/G - **Contractor 1**		-/-
11th Jul 2021	Explosion in dumper truck following mucking out - U/G - **Contractor 1**		-/-
10th July 2021	Explosion In Dumper Truck mucking out process - U/G - **Contractor 1**	Violent incident - U/G - between Chinese Engineer - Engineer National - **Contractor 1**	-/-
6th July 2021	Explosives Blasting onto 2 Pakistan workers - **Contractor 1**		-/2
23rd June 2021		Violent incident - U/G - between Chinese Engineer and 1 Engineer National - **Contractor 1**	-/1
22nd June 2021		Violent incident - U/G - between Chinese Engineer and 1 Engineer National - **Contractor 1**	-/1
??		Contractor Engineer and Local Nationals - **Contractor 2**	-/-
1st May 2021	Pakistan national - worker - stole Explosives Van - crashed U/G - **Contractor 1**		-/-
16th Apr 2021	Unattended Explosives mismanagement - **Contractor 2**		-/-
29th Mar 2021	Explosion incidents U/G - **Contractor 1**		-/-
12th Mar 2021		Summary Report of Security Incident Report at X Portal - CGGC - 9th Feb 2021 - **Contractor 1**	
10th Mar 2021	Explosives - mismanagement - **Contractor 4**		-/-
8th Mar 2021	Explosives - mismanagement - **Contractor 4**	Violent Incident - U/G - between 2 Pakistan nationals (workers) - **Contractor 1**	-/1
28th Feb 2021		Outcomes from Video Analysis –internal Released Video of the Altercation Incident at the X Portal – 9th Feb 2021 - **Contractor 1**	
9th Feb 2021		Army Rangers Live Firing - at 13 locals at main Works site - **Contractor 1**	-/5 locals/3 Army
2nd Feb 2021	Failure of Contractor to allow inspection of Explosives Magazine - **Contractor 1**		-/-
25th Jan 2021		Violent Incident - between Chinese Storekeeper and Pakistani Worker at	-/1

		Main Works Site - **Contractor 1**	
5th Jan 2021	J Bridge Explosives Issues unlicenced locals provided 1Kg explosives and detonators to use at the construction site - **Contractor 5**		-/-
5th Dec 2020		Violent Incident - between Chinese engineer and Engineer Pakistan nationals (2) - **Contractor 1**	-/2
27th Nov 2020	Unsafe and improper storage of Explosives and Detonators - U/G - **Contractor 1**		-/-
22nd Nov 2020	Explosives - Unintended Explosion - surface injuring 1 person (within 60m of main highway Site - **Contractor 1**		-/1
4th Nov 2020	Unsafe and improper storage of Explosives and Detonators - U/G - **Contractor 1**		-/-
3rd Nov 2020	Explosives trial blasting - unsafe use of explosives/detonators - **Contractor 1** - full view of Employer PD, Engineer PM		-/-
30-31st Oct 2020	Engineer Offices - Explosives dumping - brought 9 Kms from site) by senior **Engineer** staff (2 incidents on two consecutive days) from **Contractor 1**		-/-
28th Oct 2020	Abandoned Explosives found at main site at river-side dumping site - **Contractor 1** - placed by locals		-/-
27th Oct 2020	Abandoned Explosives found at main site at river-side dumping site - **Contractor 1** - placed by locals		-/-
22nd Oct 2020	Abandoned Explosives found in working Face (U/G) - **Contractor 1**		-/-
19th Oct 2020	Abandoned Explosives found at main site at river-side dumping site - **Contractor 1**		-/-
14th Oct 2020	Abandoned Explosives found at main site at river-side dumping site - **Contractor 1**		-/-
4th Oct 2020		Violent Incident between Chinese Foreman and Pakistani Foreman - **Contractor 1**	-/2
2nd Oct 2020		Aggressive Incident at Sigloo Nullah at between Chinese Engineer and 2 workers - **Contractor 2**	-/2
26th Sept 2020		Violent Incident - Involving Security Live Fired Shots at locals - **Contractor 3**	-/3
21st Sept 2020		Violent Incident - Involving Chinese engineer and local worker - **Contractor 1**	-/1
17th Sept 2020		Violent Incident - Involving Chinese	-/1

		engineer and local workers (4) - **Contractor 1**	
16th Sept 2020		Security member gave control of an automatic Weapon to a Chinese Engineer - locals - **Contractor 3**	-/-
18th Aug 2020		3-4 locals threw stones at workers - **Contractor 1**	-/-
25th July 2020	Explosives found abandoned underground -**Contractor 1**		-/-
24th July 2020	Explosives found abandoned U/G - **Contractor 1**		-/-
20th July 2020		Local worker hit Engineer Inspector motor-cycle on main highway KKH - **Contractor 1**	-/-
3rd July 2020		Altercation between 2 Engineers and 5 local workers - **Contractor 2**	-/2
28th June 2020	Explosives and Detonators found abandoned U/G - **Contractor 1**		-/-
3rd June 2020		Altercation between 2 Engineers and Engineer personnel - DT-B Inlet- **Contractor 1**	-/-
20th May 2020	Video surveillance failure - Explosives Magazine - **Contractor 1**		-/-
14th May 2020		Violent incident at Explosives Magazine - attacked by 4 locals - shots fired by Ranger forces and locals - **Contractor 1**	-/5
6th May 2020	Failure of Contractor to allow inspection of Explosives Magazine - **Contractor 1**		
	Summary - No. Incidents by Contractor[2]		
	Contractor 1 - 24 (80%)	Contractor 1 - 16 (69.6%)	14/56
	Contractor 2 - 1 (3.33%)	Contractor 2 -3 (13.05%)	-/4
	Contractor 3 - 0 (no explosives use)	Contractor 3 - 3 (13.05%)	-/5
	Contractor 4 - 3 (10%)	Contractor 4 - 0	-/-
	Contractor 5 - 1 (3.33%)	Contractor 5 - 0	-/-
	Engineer - 1 (3.33%)	Engineer - 1 (4.35%)	-/-
Total Incidents (38)	**30 (56.6%)**	**23 (43.4%)**	**14/65**
Average No. /Month (2.94)	1.66	1.27	0.78/3.61
After IED incident - 31st Dec 2021 (4)	**4 (13.33%)**	**3 (13.04%)**	**0/2 (3.07)**

[1]Reports provided by the Engineer; [2]Contractor 1-4 China; Contractor 5-7 Pakistan (ALL incidents were reported by the Engineer OHS; No reports made for IED incident by any contractor; Contractor reports show rhetoric with little actual substance and no root-cause analyses or engagement in OHS regulatory compliances).

Table 2, above, shows the outcomes of 53 major security and explosives events/incidents at

site; where 30 were Explosives related and 23 were Security related (3 extremely severe). It is to be recognised that not all the incidents are of equal importance, but are included in order to show the level of managerial ambivalence to managing such events prior to, during and after the IED incident. Contractor 1 had experienced 40 Expl/Sec events (75.5%); with the breakdown of 80% of the Explosives events and of the Security events (69.6%). This is very disturbing as the IED was directed at this contractor. This suggests that despite the contractual need to manage security, most explosives mismanagement/security events were with the Contractor 1.

3.1 Documentation Outcomes

Further, internal documents show the extent of the Risk Assessment issues:

1. The number of events/incidents (30) associated with Explosives mismanagement;

2. No Contractor (5 in total) has any Blaster licences;

3. Explosives Magazine audits - no licences for any Explosives Magazine - except one through manipulation of the records - which for the scope of the assessment was 9 months without such a licence;

4. For contractor 1, No NOCs provided for Explosives storage at site since Oct 2020, and consistently tonnes of explosives and 1000s of detonators remain missing and unaccounted for;

5. Contractor 2 has been identified as buying and selling explosives to locals and other unlicenced contractors;

6. No explosives transport licence is provided by any contractor, except contractor 2 whose explosives van is owned by a local Inspector of Explosives, indicating a clear case of conflict of interest.

To help with this, Table 3, below shows a summary of documentation/reports associated with Severe Safety Incidents with Explosives Magazines, NOCs and audits.

Table 3. Severe Safety Incidents with Explosives Magazines, NOCs and audits

Contractor	No. Reports[1]	Before IED Incident	After IED Incident
1	18	13	5
2	24	16	8
3	10	7	3
4[2]	4	3	1
5[3]	2	2	-
Total	**58**	**41**(70.7%)	**17** (29.3%)

[1]relating to significant uncontrolled Explosives magazine misuse and manipulation - including selling/buying locally and exploding explosives near the main highway (Contractor 1); [2]Contractor 4 - had used explosives/detonators at site without any authorisation or licencing; [3]Contractor 5 - bought explosives and detonators from locals for use on site.

As indicated in Table 3, above, explosives mismanagement - pre/post 14th July 2021 incident shows that explosives incidents occurred even after the IED incident. Subsequently, there does not appear to have been any learning acquired by the contractors on proper explosives management. Further, Contractor 2 manipulated the records and moved explosives without

notice or authority from an explosives magazine and did not ask for or receive permission to move such explosives. Subsequently, the explosives record is severely compromised at site.

Table 4, below, shows the security audit reports.

Table 4. Security audit reports issued - Explosives and Security

IED Incident	Security Reports Issued					
	Before		Responses	After		Responses
	Explosives	Security	From Engineer Management	Explosives	Security	From Engineer Management
Risk Management	-	-	-		6	None
Security Contract Requirements and Obligations	-	-	-		1	None
Contractor 1	2	3		1	13	
Contractor 2[1]	1	-		1	9	
Contractor 3	-	-		-	8	
Contractor 4[2]	1	-	None	1	9	None
Contractor 5[3]	-	-		-	1	
Contractor 6	-	-		-	1	
Contractor 7	-	-		-	2	
Total	*4*	*3*		*3*	*50*	

Table 4, above indicates that 50 security reports were issued to the Engineer management and some (around 20%) released to Employer - WAPDA. It would appear that the project management were not interested in managing the security arrangements and subsequently prevented 80% of the security reports being released. Further, a number of reports were not issued by the Engineer CRE to WAPDA showing the risk associated with ineffective start-up security training and protocols that were entirely ignored. For example, one report reflected on the risks associated with a major exercise was conducted at site to test the security measures adopted and implemented where the local police failed to turn up and where the security forces had no equipment - personal - radio communications or other security measures in place. This showed that WAPDA and WB group were not prepared adequately to allow the start-up of the project after the 14th July 2021 IED incident. Another report of a final test exercise, which was to secure the major highway to allow the movement of Contractor 1 personnel to site from their main camp, failed entirely as locals and the general public were seen roaming the area walking, using motor-cycles, goat-herders with flocks of goats, and trucks/buses were in use. Security was not something that could be seen in operation. As one individual (9) suggested, "…*These guys cannot protect us, they are old men* [FC]. *The police don't want to be involved - even if they are paid. The locals are completely left out, we are told nothing*".

Safety NCRs issued to contractors during the assessment period also show that the safety

culture of the Engineer, Employer and the contractors are very poor and that the Engineer has completely colluded to ensure that contractors do not need to respond to their safety responsibilities and where the local workforce and others, suffer as a consequence. The Engineer ensured this by blocking legitimate NCRs, and offered no pressure on the contractors to close the NCRs. As one individual (3) suggested, "…*We* [Engineer OHS] *issue NCRs, but the contractor does nothing because he knows that the Engineer won't do anything on the orders of the WB. It's almost a waste of time*".

Table 5, below illustrates the lack of resolve and the extent of the NCR issues on the project:

Table 5. Safety NCRs issued and contractor responses

Contractor	No. NCRs Issued by OHS	No. NCRs Blocked by the Engineer	No. Explosives/ Security NCRs	Number Closed	Number Open
1	60	13	19 (40.42%)	0	47
2	7	3	3 (42.85%)	2 (50%)	2
3	26	9	3 (11.53%)	0	17
4	1	0	0	0	1
5	3	0	1 (33.33%)	0	3
6	2	0	2 (100%)	0	2
7	0	0	0	0	0
Total	99	25 (25.25%)	29 (29.3%)	2 (2.7%)	72 (97.3%)

Only one contractor has managed to close any NCRs (2) during the 18 months assessment. Of further significance is that for contractor 1, no explosives or security related NCR have been closed or any real attempts made to close them, despite being issued with 65.5% of all NCRs.

In terms of Explosives magazine audits, and NOCs, Table 6, below illustrates the status before and after the IED incident.

Table 6. NCRs issued - Explosives Magazines, NOCs and audits - before and after IED Incident

Contractor	**No. NCRs Issued to Contractors**	**Before IED Incident**	**After IED Incident***
1	19	19	0
2	3	2	1
3	7	4	3
4	1	1	0
5	-	-	-
6	2	2	0
7	-	-	-
Total	**32**	**28**	**4**
Blocked by Engineer Management		**9**	**1**

*Note: Instructions were announced by the Engineer (verbal) not to issue contractor 1 with any NCRs - whatever the reason - after the IED incident. The Engineer has consistently

blocked NCRs even when these referred to non-compliances associated with explosives mismanagement and/or security provision before and after the IED incident.

A focused forensic analysis of the reported audits of the 5 explosives magazines indicated False Accounting/Explosives/Detonator records manipulation as:

1. *Explosives Magazines - for all 4 contractors, where the record showed missing Explosives - in tonnages for the project - during the past 18 months - and missing detonators were recorded consistently. Audits revealed that explosives magazine in/out bookings were never updated until the major audit for licencing (every 6 months). No records were ever kept at the explosives magazine despite this being a major regulatory requirement.*

2. *One contractor has no explosives magazine for either of 2 independent construction packages*

3. *Contractors moved explosives between them in order to fulfil NOC reconciliation, but no records kept showed where explosives/detonators were actually used or transited to - or confirmed as such.*

4. *Explosives and detonator records were irreconcilable. For example, which at the worst showed an explosives storage of 27 tonnes at one explosives magazine - contractor 1, when the explosives storage licence only allowed 15 tonnes and where there were 4500 detonators more than had been recorded for use storage/use and which was over the allowed storage licence requirement. No record where the excess explosives came from.*

5. *Records further indicated that Contractors 2/6 - sold and bought explosives and detonators from/to locals and to other contractors - without a licence or proper record of such.*

6. *Another record/incident report indicated that Contractor 6 - had no explosives storage capability and bought and sold explosives from the locals - often showing as explosives from one of the main contractors - without a storage/transport/use licence or an employed and licenced blaster.*

7. *Further, records indicated that an Explosives manufacturer delivered explosives to contractor 2 knowing that the contractor had no Storage licence.*

8. *No blaster for any contractor (1-5) at site had any blaster certification nor did any vehicle transporting explosives was licenced but all contractors continued to conduct blasting operations.*

9. *Since Mar 2021 - No Contractor had a Storage/Transport/Use licence on the project*

10. *Records show that - Contractor 2 had manipulated the process to receive a storage/transport/use licence without authorisation through WAPDA*

11. *The Contractors had colluded to manipulate the explosives record and to try and create a means to withhold the correct amounts of explosives/detonators at the project.*

12. *No Contractor had a licence for transport of explosives on public roads during the 18 months of this research exploration.*

13. The records show that Contractor 2 had also colluded with the local Inspectorate of Explosives by paying for a vehicle that had been given a transport licence from out of the district.

14. The Engineer CRE - consistently manipulated the report outcomes to falsify the reality in collusion with the respective Contractor - especially for Contractors 1/2.

Subsequently, the documentary evidence provided by the Contractors and even those produced by the engineer management were seen as deliberately manipulated outcomes, where the Inspector of Explosives has colluded in this manipulation. Costs associated with the use of explosives and vehicles are not recoverable under the contract and therefore do not affect project costs but cost the contractor including its administration. In this respect, the WB group were informed of this and again did nothing indicating a lack of proper management response. The WB group has "ordered" the Engineer to ignore ALL NCRs issued and start again. This is done without any change to the safety culture of the Engineer, WAPDA or itself and reinforces the negative stance of the contractors by making it easy for them to do nothing to assure the safety of the project, workers, stakeholders or the local communities. As one individual (11) suggested, "…*we were at a place to get a job back for one of the locals who was refused work by the contractor. They shot at us. No warnings. We live here. They should talk, not fight us just for trying to get work*".

4. Discussion

The discussion is separated into two areas - Risk and Security Management and is as follows:

4.1 Risk Management

The lack of risk and threat management utilised has put the project at a point of severe failure (Hadjinicolaou & Dumrak, 2017). When a full project risk assessment was carried out, WAPDA and the Engineer appear to have ignored their safety risk responsibilities (Ariyo, Eckert, & Clarkson, 2007). This is due primarily to the explosives mismanagement which in itself is a significant factor related to the extremely poor safety management culture (Shore, 2008). As one individual (8) suggested, "…*We develop site data, and report on it, but this is completely ignored by the Engineer management. How are we to move forward on OHS, if they [WB Group/WAPDA] don't recognise this big problem*".

There was no risk planning being used on the project (HSE-Steps, 2022) by any project managers. Subsequently, the issues of explosives mismanagement could have been managed more effectively if risk planning was conducted. The project managers do not appear to have identified the risks and therefore not assessed the risks and further have ignored risk management potentially for the whole of the project to date with no risk controls applied. As one individual (6) suggested, "…*risk is not what they do. They don't even do the proper project management, especially the Employer. So risk management is an issue*".

Due to the lack of risk management and engagement, the project managers - Stakeholder's - appeared to have listened to the WB group who have no experience of managing complex projects or a project management mandate and therefore this becomes a political process. The result is a fundamentally weak project leadership due to toxic leadership (James, 2022), with little or no risk planning and little technical capability indicating a lack of project cohesion (Aven, 2015). The project leadership is also considered to operate within collective rationalisation where the project reality is ignored, and the project managers make decisions with a feeble understanding of their working environment (Janis, 1982). Subsequently, the project is poorly managed with no project security plan (Land, Ricks and Ricks, 2014), lacks

a Project Management Plan (including RAM) with little confidence in their capability to make the right decisions - s4.2 *Management Plan*; s4.5 *Monitor and Control Project Work* (PMI, 2017) and due to groupthink, conduct themselves to create strategic levels of *"misrepresentation*" (Flyberg, 2021). As one individual (1) suggested, "…*The WB Group are isolated from reality of the project. They force us to do things that are not relevant to us, and then they go away. It is destruction*".

The lack of motivation to deal with risk exposure is directly related to the increased level of toxic leadership where the project stakeholders behave synonymously as in groupthink (Janis, 1991) giving the outward illusion of unanimity in the decision-making by punishing dissenters or ignoring their contributions. This also breaches the s3.10, PMBOK (PMI, 2021) by failing to recognise risk impacts and minimise the negative impacts on the project. There is an obvious negative linkage to the WB group who appear to want to control the project by proxy - without taking responsibilities and enact no accountability. As one individual (12) suggested, "…*They* [WB Group] *are so aggressive and incompetent. They shout out orders in meetings and on site. Who are these people?*".

4.2 Security Management

Further, when 30 security assessments were conducted (post-IED incident) covering the project, WAPDA nor the Engineer made any direct responses. There was no risk matrix plot conducted, even after the security risk assessment. If such a matrix was used it would have been clear that the security risk for the project remained very high, but this was not done, and the security risk appears to have been considered low to negligible (Ariyo, Eckert, & Clarkson, 2007). This is a material failure of good security management (Ricks, Ricks and Dingle, 2015) as no risk reviews were conducted s2.8.5.4, *Risk review* (PMI, 2021) or threat assessments conducted s2.8.5.1, *Threats* (PMI, 2021) or KPIs implemented s2.7.1.1, *KPIs* (PMI, 2021). The outcome from the documentation assessment, indicates crucial factors that were misunderstood, such as what to do when severe risks are discovered on the project - as there were no security management plan in place. The project managers - WAPDA and Engineer - failed to address security risk matters before/during/after IED incident - s2.3.1, *Oversight and coordination* (PMI, 2021). It would appear that discussions ensued with the security forces, but this was not translated to project requirements. . As one individual (2) indicated, "…*they* [WB Group] *are so full of it and arrogant. They have no understanding of the project, and come here, and go wherever they like, mostly without any security. They are intolerable*".

Subsequently, WAPDA had followed an Army protocol, which did nothing to protect the workers or locals, as the contractor manipulation and incidents of explosives mismanagement continued after the incident. This focus by WAPDA was detrimental to the project security oversight, as it appears that security plans and measures were ignored. Cosmetic changes were made to the busing arrangements, where an independent audit of the control and command indicated clearly that communication was an issue (no system working), and the perimeter measures were open and inadequate and where police refused to assist unless they were paid extra (security report - 12th Oct 2021). These security failings and the lack of security development and implementation (Land, Ricks & Ricks, 2014) as well as lack of screening and control access standards, indicated that health and safety as well as security of the project continues to be extremely poor (Hughes & Ferrett, 2007). Again, as groupthink developed, management decisions were conducted in secret, where outcomes were imposed, leading to continued denial of project information sharing and communications and lack of proper project governance s2.2/s2.3.8, *Governance systems* (PMI, 2021). The main

stakeholders have still not developed and implemented a construction security plan for the project some 4 months after the IED incident (security report - 16th Nov 2021). This illustrates the ambivalence of the stakeholders WAPDA, the Engineer and the WB group - and it is unsustainable to conduct the works activities without such plans, procedures and assurances, that has lead to poor perceptions of project worker security confidence levels. As one individual (6) suggested, "…*risk is not what they do. They don't even do the proper project management, especially the Employer. So risk management is an issue*".

5. Conclusions

WAPDA and the Engineer did not take sufficient notice of any risk assessments or the ongoing issues with Explosives mismanagement at the site. This weakened site safety enormously (Hayes & Kotwica, 2013) and shows a lack of applicable safety standards (Toole, 2002). For the Contractors, tonnes of Explosives and 1000's of detonators had been recorded as missing and reported to management consistently during audits without the Engineer responding appropriately under the law or with good practice. The Engineer management have contributed to levels of administrative deception as a consequence. The project managers - Engineer, WAPDA or the WB Group - have not developed and applied an appropriate risk matrix for the possibility of an explosives related incident or even for the Works nor has the project management developed and implemented a project-wide emergency-disaster management plan (Hughes & Ferrett, 2011).

Contractors have bought, sold and used Explosives from locals to conduct Works. Contractors have bought and sold Explosives whilst being unlicenced and sold Explosives to unlicenced locals. This underpins the situation prior to and after the IED incident on the 14th July 20221. The Employer and the Engineer had already lost control of the security situation prior to the bus explosion and showed impoverished management standards to address the security risks associated with Explosives mismanagement at site. Explosives mismanagement at the construction site, is considered systemic, uncontrolled and reflects a continuing high risk for security, as tonnes of explosives and thousands of detonators are considered missing. The Employer (WAPDA) and the Engineer are included in the systemic rationale to evade proper explosives management at the large construction site (Security Report - Status of Security in terms of Contractual Requirements and Obligations - 4th Sept 2021*; Security Audit Outcomes - Explosives Magazines, 29th Aug 2021* (**not available for public review*).

The lack of proper controlled and evidence-based incident assessment/management (UKFRS, 2022) coupled with compromised investigations - either by the contractor or by untrained security forces/Police - (Behm, 2005) had led to significant issues with post-incident assessment decisions (ISO45001, 2018). The lack of support from WAPDA or the Engineer to reinforce NCR closures is synonymous with the lack of project management control of the project (Lewis, 2008; Chapman and Ward, 2003). Risk informed decisions were not made, as the project managers completely ignored any risks to the project (Kerzner, 2013). The lack of risk assessment showed that the project managers - WAPDA, the Engineer and the WB group - do not accept their responsibilities under the contract which cannot be seen as responsible managers of a very complex and significant, and risk intensive project (Marle & Vidal, 2016). This outcome indicates that not only are the workforce at higher risk exposure (Kendrick, 2015) due to the explosive's mismanagement of the contractor/engineer and WAPDA, but also members of local communities.

WAPDA, the Engineer, and the WB group, missed significant opportunities to assess, prevent/mitigate risk exposure (Wysocki, 2019) through explosive's mismanagement and

security mistakes and where workers, security members and local community members suffered as a consequence. However, WAPDA and the WB group made a significant negative decision to force the removal of the OHS Lead - who was a Chartered project risk manager and certified explosives engineer - characterised as ignoring accountable project resources - s2.2.1, *Employee capability* and *s9.1, Project Resource Management* (PMI, 2017) and lack of governance capability - s1.2.5 *Tailoring* (PMI, 2021) as the only individual detailing lack of risk/explosives mismanagement impacts providing the reality as to why the project progress was so poor. This was a regrettable move as the outcome has meant that the project continues without having anyone record and report what actually was being conducted at site as the explosives mismanagement and security issues continue to occur. Subsequently, leading a large interconnected, complex project, has implications for managing people and resource management (Cavaleri & Reed, 2008; PMI, 2017) as well as for the coherent governance management of the project (Pica, 2015).

Questions remain as to why WAPDA, as a government department, was not serious about managing security at site to mitigate the levels of risk and safety due to the statistics as presented earlier (Kivrak & Arslan, 2008). However, the Engineer management was not following safety protocols and listening only to irresponsible WB group demands (who were neither risk, technical nor project management trained) and therefore lack appropriate rigour in respecting reporting of the many safety incidents (Hamilton, 2004; Hughes & Ferrett, 2007) leading to further high-risk exposure, physical injuries and property damage. The Engineer management and subsequently WAPDA management have consistently ignored their responsibilities and obligations - s12.3, *Control Requirements* (PMI, 2017) under the contract and safety laws of Pakistan and have acted with impunity. These stakeholders are thus endangering the workforce/local community and supervisory staff, when carrying out their tasks at site. Further, the Engineer has no OHS Plan/policies or any risk management protocols in place (Cooper et al., 2005), despite being provided with such in Dec 2020, but the main Japanese company in the JV does have international safety protocols but appears to not follow these at site, primarily due to a lack of explosives management/security management experience.

Safety and security management should be paramount during emergency situations, especially the utilisation of contingency plans (Hughes & Ferrett, 2011), but neither the Engineer nor WAPDA have experience in the mitigation of such issues with no emergency plan in place in case of any site-wide natural or other emergency response requirement to an event. The rhetoric from the WB group is overly aggressive, with remarks and negative physical actions at site for which it has no authority or responsibility breaching - s1.1.3 *Code of Ethics and Professional Conduct* (PMI, 2017) as well as WB ethics and professional conduct requirements (WB, 2022). This further exacerbates the security issue by pretending that the risk management and security management does not require any attention - as for example the Engineer and WB group did not take any notice of the start-up risk assessment conducted by the Engineer OHS and did not respond - even after 4 months of stoppage nor was there a business continuity plan utilised for the project (Cerullo & Cerullo, 2004; Supriadi & Pheng, 2018).

Due to the lack of engagement by the Engineer management in the documents/reporting of security outcomes and the explosives mismanagement conducted by the contractors, this has resulted in not only project delays (Odeh & Battaineh, 2002; Bramble & Callahan, 2012) but also increasing intensity and numbers of recorded safety violations (Lindhard & Wandhal, 2014). The autonomy experienced by the contractor and arrogance shown against local

community members cannot be supported as these are major stakeholders in the project (Maddaloni & Davis, 2017). Further, WAPDA, the Engineer management and the contractors have been shown to collude with the WB group together to ignore and even exacerbate the security issue at the site - especially after the IED incident safety incident. Effectively, the indifference of the major stakeholders shows sufficient levels of contempt to good project management practices (Hillson, 2003), that further issues and incidents with security and/or explosive's mismanagement has a high probability of occurrence.

There has been no move by the Engineer nor the Employer – WAPDA to commission an external investigation of the wayward WB group and its damaging effects on the project. One senior manager of the Engineer stated when telling one of the British engineers that he was terminated, that he had been forced/threatened to do this by the WB group and that he was next. This behaviour is not appropriate nor acceptable and the underpinning pathology of destructive behaviour without recognising or acknowledging the consequences of their actions (Goldman, 2009) is symptomatic of hostile "norms" (Sankowski, 1995) associated with severe toxic leadership of the WB group (Lipman-Blumen, 2006). Termination should only occur when there is a deficiency of performance and then only after due warning - and not for fulfilling the post remit and more. The recording, analysis and reporting of events is a job requirement of all management - especially when security and explosives are involved. There has been no move to commission an independent security/safety review, so this makes it appear that the Engineer is just as culpable as the Employer WAPDA and the WB group in the project decision-making and poor project performance - s4.5 *Monitor and Control Project Work* (PMI, 2017; Aksorn & Hadikusumo, 2008) and poor safety climate (Neal, Griffin & Hart, 2000).

The security matters associated with large complex civil engineering projects of Chinese contractors in Pakistan goes largely unrecorded amid the broader national security requirements. The Employer - WAPDA - lack a cohesive plan to assess and mitigate such security pressures (Harris, 2009). These security and risk management issues should be a matter of great concern for the major stakeholders of the project - s13, *Project Stakeholder Management* (PMI, 2017), who largely illustrate their continuing indifference and ill-conceived and aggressive attitudes towards project safety (Huang & Hinze, 2006) by substantially ignoring their responsibilities and obligations (Reed, 2004), as well as the reality of the situation exposed by the Engineer OHS efforts at site.

Given the security and risk matters on the project, gaining access to the reports, assessments and the ongoing issues associated with mismanaging explosives/detonators at site required tentative acceptance of an unsettling realisation, that the project management - WAPDA and the Engineer, were untrained in risk and explosive's management and had no interest in the security or storage and control of such materials (James, 2019). The project needs to be placed in "special measures" to address and tackle the obvious systemic issues of inadequate project management (Ling et al., 2009), authoritarianism (Zaman et al., 2021), lack of risk and security management (Smith & Brooks, 2013) and to investigate the place of the WB group centred around toxic leadership and coercion (Müller & Turner, 2007; Hornstein, 1996) and their irresponsible and aggressive posture. Further, in order to benefit the project, WAPDA and the Engineer should develop and implement a project-wide emergency management plan (Jain, 2006) and WAPDA management, the Engineer management, and all contractor management should receive project risk management training (Lester, 2017).

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