KOWLOON SOUTHERN LINK
Contractor's Submission Form

Contract: **KDB300 – Tunnels – Jordan Road to Yau Ma Tei Ventilation Building**

For KCRC Internal Use Only

EDMS No.: (Receipt of Submission)

To: The Engineer's Representative - Mr. Kenny Kong

Title of Submission: Proposal of Visual Monitoring System

Submission Ref. No.: KDB300/CSF/ENV/150008/D

Description of Contents: (for materials submissions, include information of suppliers, brand, type, and location of application)

☑ **Please refer to attachment** ☑ **See Below**

The Contractor's responses to the EPD's further comments relayed from KCRC via their Transmittal ref. K-60912 dated 30th May 2006 and the full revised document for your onward submission to EPD per the EP & FEP requirement.

Purpose of Submission:

☑ **For Review** ☐ **For Information** ☐ **For Record Purposes**

From: Contractor's Representative

Name: John Wong Signature:

Title: Project Manager

Date: 11th July 2006

China State Construction Engineering (Hong Kong) Ltd.

Remarks:

No. of copies included in this submission:

☑ _12__ hard copies

☑ __2_ CDs

Specification/Drawing Reference (if applicable):

Environmental Permit No. FEP-02/215/2005/A & FEP- 03/215/2005/A Cl. 2.8

FOR KCRC INTERNAL USE ONLY

Internal Distribution of Submission

RECEIPT DATE:

SUBJECT CODE:

NAME	ACTION	COMMENT	INFO

中國建築工程（香港）有限公司
CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD

KDB300 – Tunnels – Jordan Road to Yau Ma Tei Ventilation Building

Status of CSF Check Form

(For Internal Check and Record Purposes)

CSF No. & Rev.	Description
ENV/150008/A	Proposal of Visual Monitoring System
ENV/150008/B	Proposal of Visual Monitoring System (RTC and amended pages)
ENV/150008/C	Proposal of Visual Monitoring System (RTC and revised document)
ENV/150008/D	Proposal of Visual Monitoring System (RTC and revised full document)

Prepared By:	**Brian Kam**		**11 Jul 2006**
	Environmental Manager	**Signature**	**Date**
Reviewed By:	**Brian Kam**		**11 Jul 2006**
	Environmental Manager	**Signature**	**Date**
Approved By:	**John Wong**		**11 Jul 2006**
	Project Manager	**Signature**	**Date**

Department / Company Name	Reference	Date
Environmental Protection Department	Ax(1) to EP2/G/A/121 Pt. 6	26 May 2006

Item No.	VMS. Ref	Comments	Responses
1		KCRC's letter dated 23.5.06 on the revised pages for KDB300 & KDB400 VMS refer.	
2		We have mentioned in our earlier facsimiles that our comments are essentially textural in nature. We trust the textural comment would be addressed without the need for our further comment. However, our comments on the revised pages for the VMS are still sought.	
3		As per the request, please find the following on the R-to-C and revised page: "*Installation Programme*" in Appendix B – In our previous comment, we have mentioned that "*We do not consider it necessary to specify a timeframe for our processing of the VMS proposal*." Hence, please delete item 7 "*Statutory Approval*" and item 8 "*EPD Approval*" form the "*Installation Programme*" in Appendix B.	Relevant sections were deleted as requested.
4		As explained to your colleague in the tele-conversation today, the timeframe for processing the VMS proposal under the EP provision is dependent on the submissions of a VMS proposal that with comments addressed. Having said that, please submit a VMS proposal that with comments addressed for our processing under the EP provision.	

Kowloon Southern Link – KDB300 and KDB400 Tunnels, Jordan Road to Nam Cheong Station Overrun

Visual Monitoring System Proposal

(Version 5)

June 2006

Report no: 01273R0054

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Kowloon Southern Link – KDB300 and KDB400 Tunnels, Jordan Road to Nam Cheong Station Overrun

Visual Monitoring System Proposal

Author: Various

Checker: Coleman Ng

Approver: Coleman Ng

Report no: EA01273R0054

Date: June 2006

Hyder Consulting

Certified by Environmental Team Leader
Ir. Coleman Ng

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List of Appendices

1 Background

A 3.8km new underground railway line (thereafter called “Kowloon Southern Link” or KSL) would be constructed to connect the KCRC East Tsim Sha Tsui (TST) Station to the West Rail (WR) Nam Cheong (NAC) Station, with its alignment running under Salisbury Road, Canton Road and the West Kowloon Reclamation area. It is expected that the KSL would improve the accessibility to and lessen the traffic congestions at TST and West Kowloon districts. The civil construction works for the KSL are split into three design-and-build contracts namely KDB200, KDB300 and KDB400.

KCRC has awarded the contracts KDB300 and KDB400 (i.e. Jordan Road to Nam Cheong Station Overrun) to China State Construction Engineering Corporation (CSCE) in August 2005. Based on the relevant conditions stipulated in the Environmental Permit, Visual Monitoring System (VMS) shall be installed at the site for the purpose of real time visual monitoring construction activities at the site. As the web cameras will cover the major works areas and the northern end of the site is mainly for the storage of construction materials, the proposed VMS will be able to visually monitor the critical construction works area of KDB300 and KDB400. There will be a separate VMS for the monitoring of KDB200 sites.

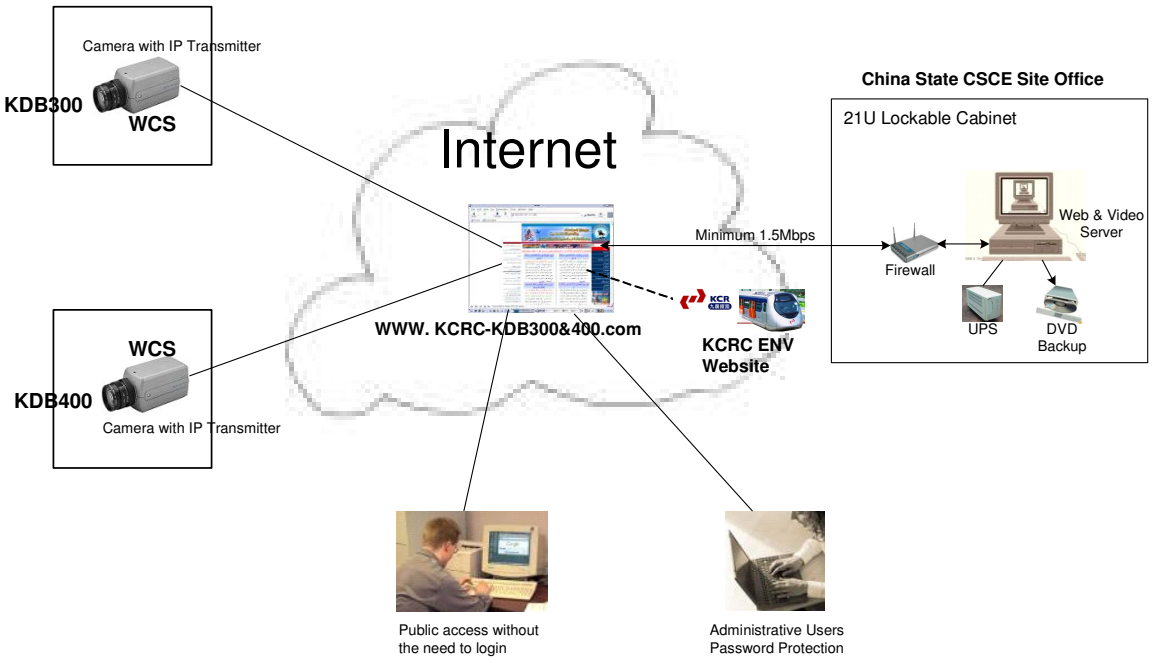
2 Proposed Visual Monitoring System

2.1 Solution Overview

According to the result in Site Survey and requirements stated in the provided Environmental Permit and Particular Specification, solution of the Visual Monitoring System consists of a dedicated website, 2 IP cameras for real-time image and 1 PC server for web hosting and recording for administrative users to retrieve stored image over the Internet. The cameras’ view will be adjusted with its pan, tilt and zoom functions when necessary for the purpose of monitoring at desired position of the construction site. Personnel including EPD, KCRC, RE, CSCE, IEC and ET, authorised by KCRC shall be able to control these functions of the cameras. In order to view the website properly, an Active X Control is required to be downloaded. Also, other than TCP Port 80, Ports 5000 and 6000-6006 (Changeable) are needed.

One IP camera will be used to monitor the construction site with major construction activities for KDB300 and KDB400 respectively. Diagram below shows the solution works.

Visual Monitoring System Diagram



Specification and site preparation required for each components and service provided in the VMS solution are mentioned in the following sections.

2.2 Configuration and Components

The main components of the VMS are as follows:

1 2 nos. of IP Cameras

2 IP Transmitters

3 Web Hosting & Video Server

4 UPS System

5 Lockable Rack

6 Firewall

7 Internet Connections

Following are the detail technical/functional specification of the above-mentioned components:

2.2.1 Cameras

Type	Outdoor
Pick Up Device	1/4" SONY CCD
Signal Format	PAL or NTSC (color)
Lens	27X Zoom (3.6mm-98mm) Replaceable mount
Digital Zoom	10X (270X with optical zoom), Remote Controllable Zoom Function
Horizontal Resolution	Color: 480TVL B/W: 600TVL
Minimum illumination	0.3 Lux at F=1.6 (Color), 0.01 Lux at F=1.6 (B/W)
Scanning Method	2:1 Interlace
S/N Ratio	48 dB (AGC off)
Electronic Shutter	1/50(PAL) ~ 1/10,000sec.
White Balance	Auto
Back Light Compensation (BLC)	Auto / On / Off
Day / Night	Yes
Iris	Automatic
Focus	Automatic
Video Output	1 Vp-p, 75Ω Composite, BNC x 1
Pan/Tilt	360° continuous pan, 0° to 90° tilt from horizontal plane
Pan/Tilt Speed	Pan : 0.5° ~ 250° / sec Tilt : 0.5° ~ 130° / sec
Control Interface	RS485
Pre-positions	128
Guard Tours	4
Power	AC24V or AC220V
Power Consumption	18W
Working Temperature	0℃ to +60℃

Working Humidity	0% ~ 90%
Weight	~2.5Kg
IP Standard	IP66
Image Size	Minimum size of 640 x 480 pixels
Refresh Rate	Five seconds or better
Outdoor Type	Weather proof, Water tight enclosure and windscreen wiper.
Others functional specifications: • 80 Preset Positions • Auto Iris & Focus • RS-485 Interface & Telemetry Control	

2.2.2 IP Transmitter

1 channel MPEG 4 network transmitter
CIF (360x288)
30 fps

2.2.3 Web Hosting & Video Server

Intel Xeon 2.8GHz
1 GB RAM
Total internal storage with 2TB in 2 ATA RAID channels. One channel for 3-month image storing in RAID5. Another channel for daily backup. *(Estimated storage for pictures captured by 2 cameras at 720x576 at refresh rate of 5 seconds in 24-hour basis)*
Internal DVD-writer
10 BaseT / 100 BaseTX fast Ethernet interface for connection to a local area network with TCP/IP suite of protocol.
Supporting network protocol including but not be limited to HTTP, FTP, DHCP.
Microsoft Window 2003 Server operating system and Internet Information Server.
Snapshot images viewable by IE 5.5, 6.0 or above.
Password protection to control access to the images and administrative

functions of the server.
Capability to convert the received video signal into snapshot image in JPEG image format.
The minimum recording rate is 1 frame per second and the file size of 1 frame is 0.05MB. Therefore, 8.64 GB hard disk space is needed for the daily operation. Internal storage will be stored images for 93 days in RAID5 and daily back up on separate RAID channel by Windows Utility.

2.2.4 Internet Connections

Minimum 1.5Mbps Internet connection with Firewall Protection.
Transmit data between web hosting & video server and IP cameras.
Allow public and administrator to access to real-time and stored image correspondingly

2.2.5 Website

Display video images collected by 2 WCS and available at all times for public access.
A link to the KCRC Environmental Website.
Security against unauthorized access, modification and hacking.
Update latest security patches from Microsoft within one week after made available by Microsoft.
Separate web pages for each WCS for public access without the need to login.
Images captured by each WCS displayed in minimum size of 640x480 pixels and at a refresh rate of 5 seconds.
A button linked to the KCRC Environmental website and link to other web pages of the same VMS.
A button for remote control of the zoom function of the camera in each WCS.
Contain an equivalent set of password protected web pages for each WCS for access and allow password changeable.
Images in each web page are downloadable and the software for downloading the images will be provided for the Employer's Representatives.

User-friendly Searching functions for the representative to retrieve the stored images.
Stored images contained a date and timestamp at which the image is captured.
Zoom function is not accessible through the web pages in general. However, software can be installed for authorized persons with password control for zoom function. The camera shall be restored to a pre-defined zoom position after a user-defined period of idle time.

The VMS can support around 20 concurrent users which depends on the picture quality captured at that moment.

3 Setup

Two cameras will be installed on site throughout the construction period (Anticipated from January 2006 to December 2008). The cameras will be positioned to cover the major work sites. The location of the IP cameras is described below and shown in Appendix A.

Camera	Location
KDB 300	The roof of FEHD refuse collection point (RCP) at Man Cheong Street
KDB 400	Slope within KDB400 site boundary between Lai Cheung Road and Olympian Park of Olympian City II.

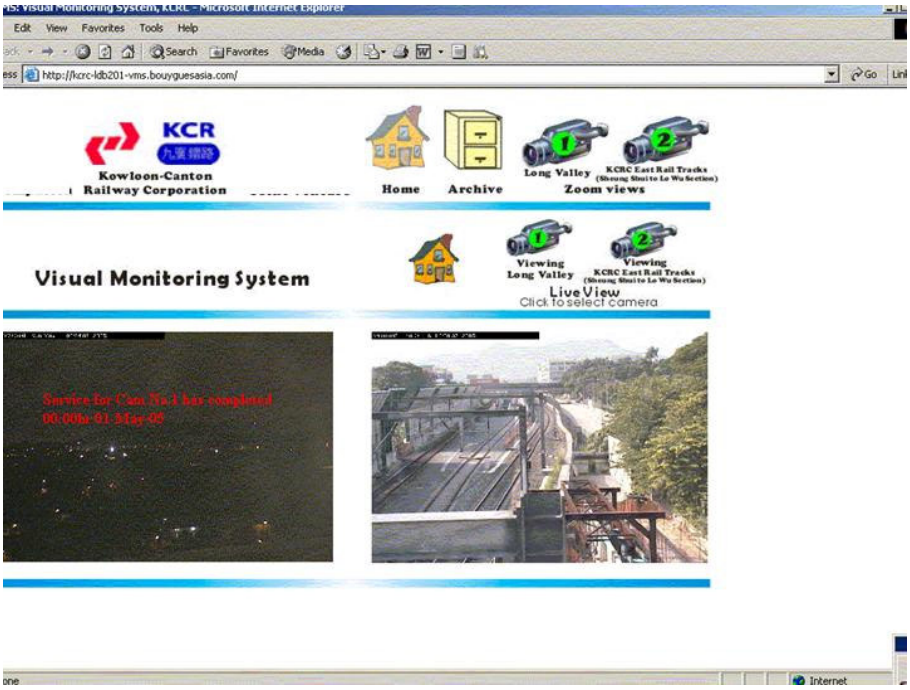
The pan angle of camera is 360° with a viewing angle about 45°. The camera will be installed on a pole.

Web camera for KDB 300 will be installed on a pole at 2m above the roof of RCP. The pole will be clipped on the parapet wall of the roof. The height of this camera above the existing site level is about 8 m. The one for KDB 400 will be installed within the site on a pole of at least 10 m above ground.

Each camera will have a dedicated IP transmitter, which has a fixed IP / port address and is connected to the Internet. The transmitter will be accessible via a dedicated website (www.kcrckdb300400.com). The website will be provided and registered under the name of the KCRC.

Although the quality of photos and the view of ordinary digital camera deviate from web camera, site photos were taken at the proposed web cameras location and presented in Appendix C.

Sample layout for the web access to the real-time image from the camera is shown in the following:



4 System Maintenance

A 24-hour hotline will be provided for reporting problems. The response time to system failures will be within 2 hours during normal business hour (Monday to Friday 9:00 – 18:00, Saturday 9:00 – 13:00) and within 3 hours outside normal business hour.

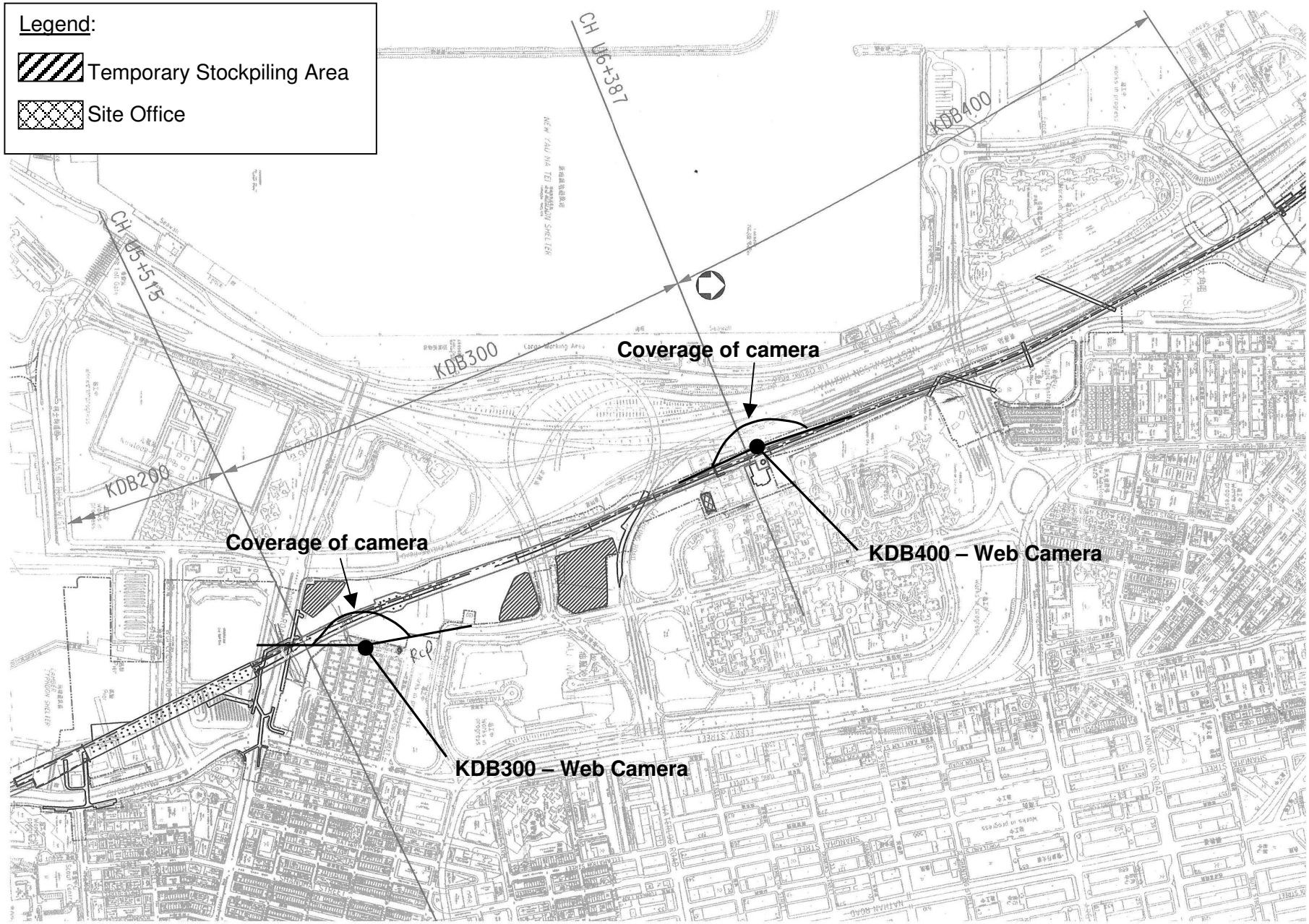
In case of system failure, a video server will be restored and/or replaced within 1 working day and perform manual contingency measurement during the period of replacement or otherwise agreed by the Engineer.

5 Programme

Appendix B shows the proposed programme for the implementation of the VMS.

Appendix A

Location Plan

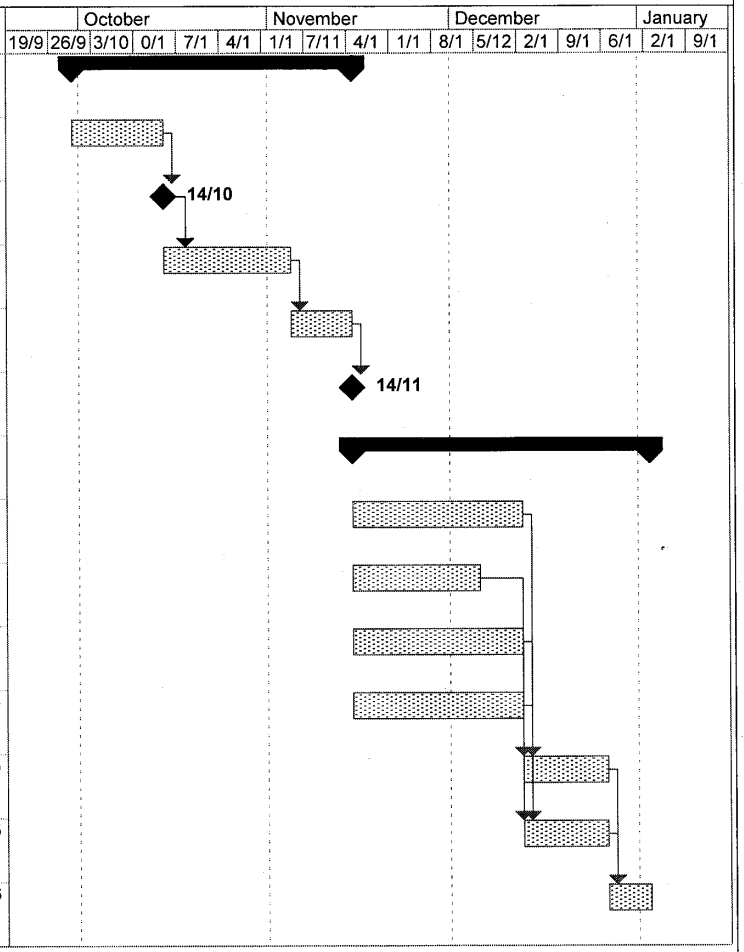

Legend:
Temporary Stockpiling Area
Site Office
CH 0+387
KDB400
CH 0+515
KDB300
KDB200
Coverage of camera
Coverage of camera
KDB400 – Web Camera
KDB300 – Web Camera

Appendix B

Installation Programme

KCRC KSL KBD 300 & 400
Visual Monitoring System
Appendix B - Installation Programme

ID	Task Name	Duration	Start	Finish
1	**VMS Proposal Preparation**	**46 days**	**Fri 30/9/05**	**Mon 14/11/05**
2	Prepare of VMS Proposal	15 days	Fri 30/9/05	Fri 14/10/05
3	Submit of VMS Proposal	0 days	Fri 14/10/05	Fri 14/10/05
4	KCRC Review and Comment	21 days	Sat 15/10/05	Fri 4/11/05
5	Revise VMS Proposal	10 days	Sat 5/11/05	Mon 14/11/05
6	Submit VMS Proposal	0 days	Mon 14/11/05	Mon 14/11/05
7	**Installation, Testing and Commissioning**	**49 days**	**Tue 15/11/05**	**Mon 2/1/06**
8	Equipment Procurement	28 days	Tue 15/11/05	Mon 12/12/05
9	Domain Registration	21 days	Tue 15/11/05	Mon 5/12/05
10	Internet Access Installation	28 days	Tue 15/11/05	Mon 12/12/05
11	Poles Installation	28 days	Tue 15/11/05	Mon 12/12/05
12	Cameras Installation	14 days	Tue 13/12/05	Mon 26/12/05
13	Video Server Installation	14 days	Tue 13/12/05	Mon 26/12/05
14	Testing and Commissioning	7 days	Tue 27/12/05	Mon 2/1/06



Appendix C

Site Photos

KDB300

Note:

- Photos taken on 8 October 2005.
- The resolutions of digital camera and web camera are different. Therefore the actual view of web camera will deviate from the above photos.

KDB400

Note:

- Photos taken on 20 January 2006.
- As the 10m-pole has not been erected yet, photos were taken on the roof of Olympian City Phase II shopping centre. Moreover the resolutions of digital camera and web camera are different. Therefore the actual view of web camera will deviate from the above photos