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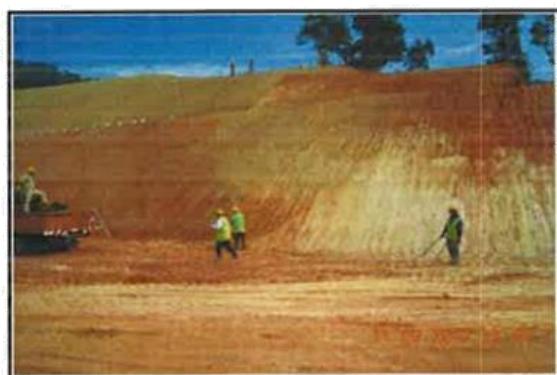
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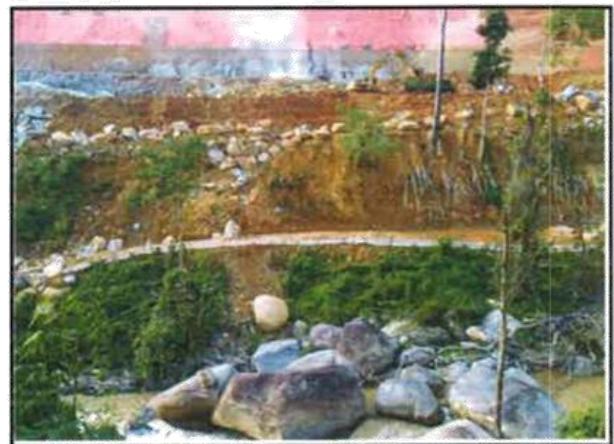



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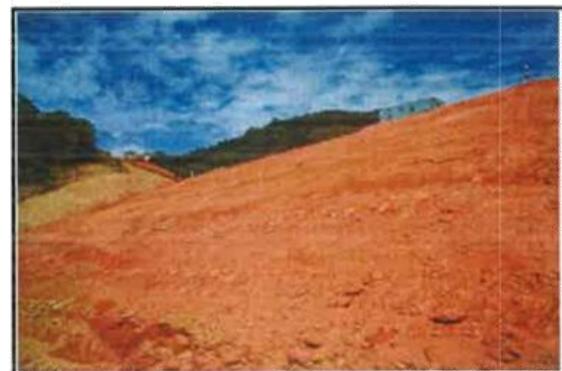
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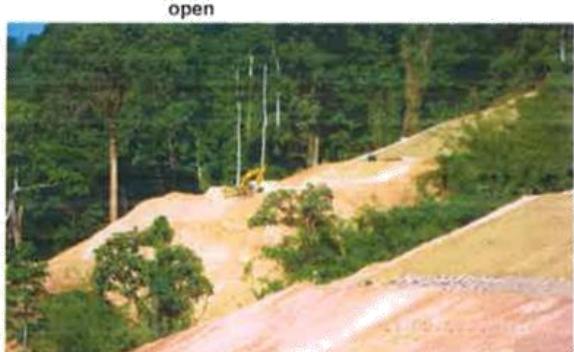
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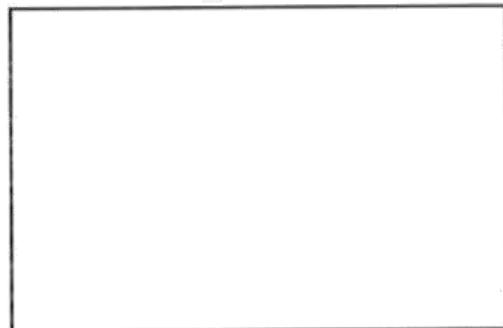
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SMEC Name: <u>Alfredo</u> Date: <u>11/11/12</u> Signature: <u>X</u>	TM-SALINI CONSORTIUM Name: <u>FRANCESCO GAETA</u> Date: <u>27.8.2012</u> Signature: <u>Francesco Gaeta</u>
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**ENVIRONMENTAL MANAGEMENT**

**PERFORMANCE MONITORING – ENVIRONMENTAL CONTROL MEASURES**

Date of EIA Approval	: 24 February 2001
COA Ref. No.	: AS50/013/201/006 Jilid 8
Date of EMP Approval	: 8 October 2008
EMP Approval Ref. No.	: AS50/013/201/006 Jilid 20 (5)
Date of ESCP Approval	: 17 June 2011
ESCP Approval Ref. No.	: Bil.(15) dlm.JPS.PHG.TK 008/30 BHG.3

No.	Location	Control Measures	Provision		Status (Installation)	Response from Contractor dated 09/10/2014 (Maintenance: Reply to PM-01/10/2014)	Observations/Findings/Suggestions (Last Inspection – 18/09/2014)	Observations/Findings/Suggestions (Recent Inspection – 30/09 & 01/10/2014)	Observations/Findings/Suggestions (Latest Inspection – 14/10/2014)	*Accepted (✓ / X)		
			ESCP	Actual								
<b>A. Silt Traps and Vicinity Area</b>												
1.	Saddle Dam A	ST-2-01	✓	✓	Installed on: 1 Aug 2011  Status: Operational  <u>Last Maintenance:</u> - 09 Aug 2014: De-silt - 09 June 2014: De-silt - 24 Feb 2014: De-silt - 14 Jan 2014: De-silt - 28 Dec 2013: Gabion wall	<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> 09 October 2014	<u>Observation:</u> - Clear discharge is observed from silt trap. - Some section of exposed slope at RHS & LHS Saddle Dam A has yet to be vegetated.  <u>Suggestions/Recommendations:</u> - To vegetate the exposed slope immediately. - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	<u>Observation:</u> - Clear discharge is observed from silt trap. - Some section of exposed slope at RHS & LHS Saddle Dam A has yet to be vegetated.  <u>Suggestions/Recommendations:</u> - To vegetate the exposed slope immediately. - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	<u>Observation:</u> - Slightly clear discharge is observed from silt trap. - Some section of exposed slope at RHS & LHS Saddle Dam A has yet to be vegetated.  <u>Suggestions/Recommendations:</u> - To vegetate the exposed slope immediately. - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	X	X	X
2.	Saddle Dam A	ST-2-02	✓	✓	Installed on: 15 Aug 2011  Status: Operational  <u>Last Maintenance:</u> - 26 July 2014: De-silt - 09 June 2014: De-silt earth drain - 26 Feb 2014: De-silt - 8 Feb 2014: De-silt	<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> 17 October 2014	<u>Observation:</u> - Clear water ponding is observed.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	<u>Observation:</u> - Outlet has been constructed for this pond. - No discharge is observed.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	<u>Observation:</u> - Clear discharge is observed. - In progress of land clearing including bushes in the reservoir area.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	✓	✓	✓
5.	Forest Area (Access)	ST-2-05	✓	✓	Installed on: 22 July 2012  Status: Operational  <u>Last Maintenance:</u> - 5 Dec 2013: De-silting - 2 Oct 2013: De-silting	<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> 05 November 2014	<u>Observation:</u> - No discharge is observed. - Dumping activity active has been done.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	<u>Observation:</u> - No discharge is observed. - Natural vegetation is observed in the pond and surrounding it.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	<u>Observation:</u> - No discharge is observed. - Natural vegetation is observed in the pond and surrounding it.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	✓	✓	✓
6.	River Diversion	GB 14 (d/stream of ST5)	-	✓	Installed on: May 2012  Status: Operational  <u>Last Maintenance:</u> (To be updated by	<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> (To be updated by	<u>Observation:</u> - No access due to natural vegetation and hydroseeding grows very well surrounding the silt trap.	<u>Observation:</u> - No access due to natural vegetation and hydroseeding grows very well surrounding the silt trap.	<u>Observation:</u> - No access due to natural vegetation and hydroseeding grows very well surrounding the silt trap.  <u>Suggestions/Recommendations:</u>	X		

No.	Location	Control Measures	Provision		Status (Installation)	Response from Contractor dated 09/10/2014 (Maintenance: Reply to PM-01/10/2014)	Observations/Findings/Suggestions (Last Inspection – 18/09/2014)	Observations/Findings/Suggestions (Recent Inspection – 30/09 & 01/10/2014)	Observations/Findings/Suggestions (Latest Inspection – 14/10/2014)	*Accepted	
			ESCP	Actual						(√ / X)	
					- 17 November 2013: Close turfing - 9 Oct 2013: Closed-turfing	Contractor	Suggestions/Recommendations: - To clear the bushes and make an access. - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	Suggestions/Recommendations: - To clear the bushes and make an access. - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	- To clear the bushes and make an access. - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	X	
7.	Spillway	ST-2-06	✓	X	Installed on: 30 June 2011  Status: Closed on 01-03-  <u>Last Maintenance:</u> -16 Jan 2014: Replaced plastic sheets -16 Jan 2014: Desilting sump	Proposed Action / Action Taken:  Next Maintenance: (To be updated by Contractor)	Observation: - Exposed slope (LHS & RHS) at newly constructed drain has yet to be vegetated.  Suggestions/Recommendations: - To protect the exposed slope immediately. - To maintenance regularly the access road.	Observation: - Exposed slope (LHS & RHS) at newly constructed drain has yet to be vegetated.  Suggestions/Recommendations: - To protect the exposed slope immediately. - To maintenance regularly the access road.	Observation: - Exposed slope (LHS & RHS) at newly constructed drain has yet to be vegetated.  Suggestions/Recommendations: - To protect the exposed slope immediately. - To maintenance regularly the access road.	Observation: - Exposed slope (LHS & RHS) at newly constructed drain has yet to be vegetated.  Suggestions/Recommendations: - To protect the exposed slope immediately. - To maintenance regularly the access road.	X
8.	Batching Plant	ST-2-06a	-	✓	Installed on: 5 Sept 2011  Status: Operational  <u>Last Maintenance:</u> - 6 Dec 2013: Construct earth bund - 8 Nov 2013: Desilting	Proposed Action / Action Taken:  Next Maintenance: 03 November 2014	Observation: - Dry silt trap is observed.  Suggestions/Recommendations: - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	Observation: - No discharge is observed.  Suggestions/Recommendations: - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	Observation: - No discharge is observed.  Suggestions/Recommendations: - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	Observation: - No discharge is observed.  Suggestions/Recommendations: - Daily monitoring and regular inspection to be carried out after event of heavy downpour.	✓
9.	Main Dam	ST-2-06d	-	✓	Installed on: 30 March 2012  Status: Operational  <u>Last Maintenance:</u> - 18 Sep 2014: Desilt - 10 June 2014: Desilt - 24 Mar 2014: Desilting - 24 Feb 2014: Desilting	Proposed Action / Action Taken:  Next Maintenance: 18 October 2014	Observation: - No discharge is observed. - Silt trap has been de-silted.  Suggestions/Recommendations: - To plan and provide schedule for maintenance works. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	Observation: - No discharge is observed. - Silt trap has yet to be de-silted.  Suggestions/Recommendations: - To plan and provide schedule for maintenance works. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	Observation: - No discharge is observed. - Silt trap has yet to be de-silted.  Suggestions/Recommendations: - To plan and provide schedule for maintenance works. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	Observation: - Clear discharge is observed. - Silt trap has yet to be de-silted. - Backflow from river water is observed.  Suggestions/Recommendations: - To plan and provide schedule for maintenance works. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	X
10.	Coffer Dam	ST-2-06e	-	✓	Installed on: 27 Dec 2012  Status: Operational  <u>Last Maintenance:</u> - 6 Aug 2014: Desilting - 8 July 2014: Install dissipater - 6 Feb 2014: De-	Proposed Action / Action Taken:  Contractor will rectify the embankment together with construction of permanent gabion wall.  Next Maintenance: 06 November 2014	Observation: - No discharge is observed. - Eroded river bank/embankment LHS ship pile has yet to be rectified.  Suggestions/Recommendations: - To rectify eroded river bank/embankment immediately. - Daily monitoring and regular inspection/maintenance to be	Observation: - No discharge is observed. - Eroded river bank/embankment LHS ship pile has yet to be rectified.  Suggestions/Recommendations: - To rectify eroded river bank/embankment immediately. - Daily monitoring and regular inspection/maintenance to be	Observation: - No discharge is observed. - Eroded river bank/embankment LHS ship pile has yet to be rectified.  Suggestions/Recommendations: - To rectify eroded river bank/embankment immediately. - Daily monitoring and regular inspection/maintenance to be	Observation: - No discharge is observed. - Eroded river bank/embankment LHS ship pile has yet to be rectified.  Suggestions/Recommendations: - To rectify eroded river bank/embankment immediately. - Daily monitoring and regular inspection/maintenance to be	X

No.	Location	Control Measures	Provision		Status (Installation)	Response from Contractor dated 09/10/2014 (Maintenance: Reply to PM-01/10/2014)	Observations/Findings/Suggestions (Last Inspection – 18/09/2014)	Observations/Findings/Suggestions (Recent Inspection – 30/09 & 01/10/2014)	Observations/Findings/Suggestions (Latest Inspection – 14/10/2014)	*Accepted
			ESCP	Actual						(✓ / X)
					silting - 30 Dec 2013: Closed turfing - 10 Dec 2013: De-silting		carried out after event of heavy downpour. - To plan and provide schedule for maintenance works.	x	carried out after event of heavy downpour. - To plan and provide schedule for maintenance works.	x
13.	Relocation Road (B)	ST-2-15 CH 2550	✓	-	Installed on: 21 February 2014  Status: Operational	Next Maintenance: 03 October 2014	Observation: - No discharge is observed from the silt trap.  Suggestions/Recommendations: - To rectify the outlet immediately. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	✓	Observation: - Slightly turbid discharge is observed from the silt trap due to heavy downpour at night.  Suggestions/Recommendations: - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	x
14.	Relocation Road (B)	ST-2-16 CH 2650	✓	-	Installed on: 23 February 2014  Status: Operational	Next Maintenance: 03 October 2014	Observation: - No discharge from silt trap is observed. - Dry silt trap is observed. - Riprap works in progress along the expose slope.  Suggestions/Recommendations: - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	✓	Observation: - No discharge from silt trap is observed. - Gap is observed at the gabion wall. - Riprap works in progress along the expose slope.  Suggestions/Recommendations: - To rectify the gap immediately. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	x
15.	Relocation Road C5	ST-2-17 CH 3200	✓	-	Installed on: 25 February 2014  Status: Operational  Last Maintenance: - 12 July 2014: Rectify geotextile	Proposed Action / Action Taken: - Ruptured geotextile has been rectified.  Next Maintenance: 03 October 2014	Observation: - No discharge is observed from the silt trap. - Eroded outlet has yet to be rectified.  Suggestions/Recommendations: - To rectify the outlet immediately. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	x	Observation: - Turbid discharge is observed from the silt trap due to heavy downpour at night. - Eroded outlet has yet to be rectified.  Suggestions/Recommendations: - To rectify the outlet immediately. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.	x
16.	Relocation Road	ST-2-18 CH 3600	✓	-	Installed on: 28 February 2014  Status: Operational	Next Maintenance: 03 October 2014	Observation: - Dry silt trap is observed. - Outlet is observed to be eroded.  Suggestions/Recommendations: - To rectify the outlet immediately. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy downpour.		Observation: - Slightly clear discharge is observed. - Outlet is observed to be eroded.  Suggestions/Recommendations: - To rectify the outlet immediately. - Daily monitoring and regular inspection/maintenance to be carried out after event of heavy	x

No.	Location	Control Measures	Provision		Status (Installation)	Response from Contractor dated 09/10/2014 (Maintenance: Reply to PM-01/10/2014)	Observations/Findings/Suggestions (Last Inspection – 18/09/2014)	Observations/Findings/Suggestions (Recent Inspection – 30/09 & 01/10/2014)	Observations/Findings/Suggestions (Latest Inspection – 14/10/2014)	*Accepted
			ESCP	Actual						(√ / X)
								X	downpour.	X
<b>B. Retention Ponds and Vicinity Area</b>										
1.	Reservoir	RP 1	√	√	Status: - Construct 2 new RPs on 11 Mar 2013 - Constructed 3 RP 1 <sup>st</sup> installed on July 2012 - 2 <sup>nd</sup> & 3 <sup>rd</sup> installed on September 2012  Status: Operational  <u>Last Maintenance:</u> 13 September 2013: Rectify gaps at the outlet gabion RP 2 13 June 2013: Rectify gaps at the outlet gabion RP 2	<u>Proposed Action / Action Taken:</u>  <u>Date to be completed / Date of completion:</u>  <u>Next Maintenance:</u> (To be updated by Contractor)	<u>Suggestions/Recommendations:</u> - To construct the retention ponds as proposed in the approved ESCP. - To construct the retention pond at strategic locations (lower points to capture silted run-off).	<u>Suggestions/Recommendations:</u> - To construct the retention ponds as proposed in the approved ESCP. - To construct the retention pond at strategic locations (lower points to capture silted run-off).	<u>Suggestions/Recommendations:</u> - To construct the retention ponds as proposed in the approved ESCP. - To construct the retention pond at strategic locations (lower points to capture silted run-off).	<u>Suggestions/Recommendations:</u> - To construct the retention ponds as proposed in the approved ESCP. - To construct the retention pond at strategic locations (lower points to capture silted run-off).
2.	Reservoir	RP 2/P02	√	√						
3.	Reservoir	RP 3/P03	√	√						
4.	Reservoir	RP 4	√	-						
5.	Reservoir	RP 5	√	-						
6.	Reservoir	RP 6	√	-						
7.	Reservoir	RP 7	√	-						
8.	Reservoir	RP 8	√	-						
9.	Reservoir	RP 9	√	-						
10.	Reservoir	RP 10	√	-						
11.	Reservoir	RP 01a	√	√						
12.	Reservoir	RP 01b	√	√						
13.	Reservoir	RP 01c	√	√						
14.	Reservoir	RP 11	√	-						
15.	Reservoir	RP 12	√	-						
16.	Reservoir	RP 13	√	-						
17.	Reservoir	RP 14	√	-						
18.	Reservoir	RP 15	√	-						
19.	Reservoir	RP 16	√	-						
20.	Reservoir	RP 17	√	-						
21.	Reservoir	RP 18	√	-						
22.	Reservoir	RP 19	√	-						
23.	Reservoir	RP 20	√	-						
24.	Reservoir	RP 21	√	-						
25.	Reservoir	RP 22	√	-						
26.	Reservoir	RP 23	√	-				√	√	√
<b>C. Gabion Walls / Silt Fences and Other Control Facilities</b>										
1.	Temporary Bridge	CD Service Road 1	-	✓	Installed on: December 2011  <u>Last Maintenance:</u> - 20 May 2013: De-silting sump - 01 Apr 2013: Remove excessive earth materials on the bridge.	<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out.	<u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out.	<u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out.	<u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out.
								√*	√*	√*

No.	Location	Control Measures	Provision		Status (Installation)	Response from Contractor dated 09/10/2014 (Maintenance: Reply to PM-01/10/2014)	Observations/Findings/Suggestions (Last Inspection – 18/09/2014)	Observations/Findings/Suggestions (Recent Inspection – 30/09 & 01/10/2014)	Observations/Findings/Suggestions (Latest Inspection – 14/10/2014)	*Accepted		
			ESCP	Actual						(√ / X)		
2.	Wash Trough	WT	√	√	Installed on: 06 November 2012  Status: Operational  <u>Last Maintenance:</u> - 23 Jan 2014: Carry out maintenance works - 16 Jan 2014: Desilting earth drain	<u>Proposed Action / Action Taken:</u>  <u>Date to be completed / Date of completion:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Maintenance of WT has been carried out.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out.	<u>Observation:</u> - Maintenance of WT has been carried out.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out.	<u>Observation:</u> - Maintenance of WT has been carried out.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out.	√	√	√
3.	Stockpile 1 (behind batching plant)	Exposed slope	-	√	Installed on: 21 June 2012  <u>Last Maintenance:</u> - 27 May 2014: Desilting - 2 Jan 2014: Closed turfing - 20 Nov 2013: Desilting - 10 Oct 2013: Desilting & erect SF	<u>Proposed Action / Action Taken:</u>  <u>Date to be completed / Date of completion:</u>  <u>Next Maintenance:</u> (To be updated by Contractor)	<u>Observation:</u> - Dead turfing grass has yet to be rectified.  <u>Suggestions/Recommendations:</u> - To plan and provide schedule for maintenance works.	<u>Observation:</u> - Dead turfing grass has yet to be rectified.  <u>Suggestions/Recommendations:</u> - To plan and provide schedule for maintenance works.	<u>Observation:</u> - Dead turfing grass has yet to be rectified.  <u>Suggestions/Recommendations:</u> - To plan and provide schedule for maintenance works.	X	X	X
4.	Stockpile 2 (office)	Drainage system	-	√	Installed on: 12 June 2012  <u>Last Maintenance:</u> - 16 Jan 2014: Desilting - 10 Oct 2013: Erect silt fence - 16 July 2013: Desilting	<u>Proposed Action / Action Taken:</u>  <u>Date to be completed / Date of completion:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Silted drain is observed in front of office access road.  <u>Suggestions/Recommendations:</u> - To de-silt the drain. - To plan and provide schedule for maintenance works.	<u>Observation:</u> - Silted drain is observed in front of office access road.  <u>Suggestions/Recommendations:</u> - To de-silt the drain. - To plan and provide schedule for maintenance works.	<u>Observation:</u> - Silted drain in front of office access road has yet to be rectified.  <u>Suggestions/Recommendations:</u> - To de-silt the drain. - To plan and provide schedule for maintenance works.	X	X	X
5.	Access Road	Dust Control			<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Water browsing has been carried out.  <u>Suggestions/Recommendations:</u> - Road wetting to be carried out more regularly. - Reduce speed limit.	<u>Observation:</u> - Raining season is coming.  <u>Suggestions/Recommendations:</u> - Road wetting to be carried out more regularly. - Reduce speed limit.	<u>Observation:</u> - Raining season, no dust anymore.  <u>Suggestions/Recommendations:</u> - Road wetting to be carried out more regularly. - Reduce speed limit.	√	√	√	
6.	Administrator office (RHS access road)	Exposed slope			<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Exposed slope has yet to be vegetated and dead turfed grass is observed.  <u>Suggestions/Recommendations:</u> - To plan and provide schedule for maintenance works.	<u>Observation:</u> - Exposed slope has yet to be vegetated and dead turfed grass is observed.  <u>Suggestions/Recommendations:</u> - To plan and provide schedule for maintenance works.	<u>Observation:</u> - Exposed slope has yet to be vegetated and dead turfed grass is observed.  <u>Suggestions/Recommendations:</u> - To plan and provide schedule for maintenance works.	X	X	X	

No.	Location	Control Measures	Provision		Status (Installation)	Response from Contractor dated 09/10/2014 (Maintenance: Reply to PM-01/10/2014)	Observations/Findings/Suggestions (Last Inspection – 18/09/2014)	Observations/Findings/Suggestions (Recent Inspection – 30/09 & 01/10/2014)	Observations/Findings/Suggestions (Latest Inspection – 14/10/2014)	*Accepted
			ESCP	Actual						(✓ / X)
7.	Canteen (R/LHS access road)	Exposed slope				<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Dead turfed grass has yet to be rectified.  <u>Suggestions/Recommendations:</u> - To carry out maintenance works and watering the grass. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Dead turfed grass has yet to be rectified.  <u>Suggestions/Recommendations:</u> - To carry out maintenance works and watering the grass. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Dead turfed grass has yet to be rectified.  <u>Suggestions/Recommendations:</u> - To carry out maintenance works and watering the grass. <span style="border: 1px solid red; padding: 2px;">X</span>	X
8.	Workers' Camp	Housekeeping	-	-	Last Maintenance: - 20 Nov 2013: Re-leveling	<u>Proposed Action / Action Taken:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Poor housekeeping is observed at canteen area and also at workers' camp has yet to be rectified.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Poor housekeeping is observed at workers' camp has yet to be rectified.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Housekeeping is observed at workers' camp has yet to be carried out.  <u>Suggestions/Recommendations:</u> - Remnants of open burning are observed at workers' camp near pipe storage.  <u>Suggestions/Recommendations:</u> - Daily monitoring and regular inspection/maintenance to be carried out. <span style="border: 1px solid red; padding: 2px;">X</span>	X
9.	Site Office	Oil & Grease; Scheduled Waste (SW)	-	-		<u>Proposed Action / Action Taken:</u>  <u>Date to be completed / Date of completion:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Oil spill observed at genset area near site office has yet to be rectified.  <u>Suggestions/Recommendations:</u> - SW to be properly contained, labelled, stored and handled/disposed in accordance to the regulations. - Inventory record to be maintained. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Oil spill observed at genset area near site office has yet to be rectified.  <u>Suggestions/Recommendations:</u> - No label and contaminated sand is observed.  <u>Suggestions/Recommendations:</u> - SW to be properly contained, labelled, stored and handled/disposed in accordance to the regulations. - Inventory record to be maintained. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - No more oil spill at genset area near site office. - Contaminated sand has been collected. - No labelling at schedule waste is observed.  <u>Suggestions/Recommendations:</u> - SW to be properly contained, labelled, stored and handled/disposed in accordance to the regulations. - Inventory record to be maintained. <span style="border: 1px solid red; padding: 2px;">X</span>	X
10.	Temporary access road (d/stream spillway)	Silt control	-	-	Last Maintenance: -3 July 2014: Compacting access road with gravel	<u>Proposed Action / Action Taken:</u>  <u>Date to be completed / Date of completion:</u>  <u>Next Maintenance:</u> Everyday monitoring	<u>Observation:</u> - Anticipated direct runoff into the river.  <u>Suggestions/Recommendations:</u> - Ruptured plastic sheeting is observed.  <u>Suggestions/Recommendations:</u> - To construct contour bund and channel it into spillway area. - To plan and provide schedule for maintenance works. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Anticipated direct runoff into the river.  <u>Suggestions/Recommendations:</u> - Ruptured plastic sheeting is observed.  <u>Suggestions/Recommendations:</u> - To construct contour bund and channel it into spillway area. - To plan and provide schedule for maintenance works. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Direct water pumping is observed but water is clear.  <u>Suggestions/Recommendations:</u> - To construct contour bund and channel it into spillway area. - To plan and provide schedule for maintenance works. <span style="border: 1px solid red; padding: 2px;">X</span>	X
11.	Main Dam	Exposed slope	-	-	Last Maintenance: -18 Sep 2014: Re-hydroseeding IPA	<u>Proposed Action / Action Taken:</u>	<u>Observation:</u> - Exposed slope is observed at IPA area has been re-hydroseed. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Hydroseeded starts to grow. <span style="border: 1px solid red; padding: 2px;">X</span>	<u>Observation:</u> - Hydroseeded starts to grow. <span style="border: 1px solid red; padding: 2px;">X</span>	X

No.	Location	Control Measures	Provision		Status (Installation)	Response from Contractor dated 09/10/2014 (Maintenance: Reply to PM-01/10/2014)	Observations/Findings/Suggestions (Last Inspection – 18/09/2014)	Observations/Findings/Suggestions (Recent Inspection – 30/09 & 01/10/2014)	Observations/Findings/Suggestions (Latest Inspection – 14/10/2014)	*Accepted	
			ESCP	Actual						(✓ / X)	
					slope 15 May 2014: Closed turfing has been carried out.	Date to be completed / Date of completion:  Next Maintenance: Everyday monitoring	Suggestions/Recommendations: - To use others method to plant the seeds (netting, coil log). - To install sprinkler to watering the hydroseeded grass. - To plan and provide schedule for maintenance works.	Suggestions/Recommendations: - To install sprinkler to watering the hydroseeded grass. - To plan and provide schedule for maintenance works.	Suggestions/Recommendations: - To install sprinkler to watering the hydroseeded grass. - To plan and provide schedule for maintenance works.		
12.	Relocation Road	Exposed slope			Last Maintenance:  Proposed Action / Action Taken: Constructed check dam at culvert C4.  Date to be completed / Date of completion:  Next Maintenance: Everyday	Observation: - Exposed slope is observed along relocation. - Riprap works is in progress at slope area.  Suggestions/Recommendations: - To vegetate/ protect exposed slope immediately. - To plan and provide schedule for maintenance works.	Observation: - Turfing works has been started at some area. However still many exposed slope is observed along relocation. - Riprap works is also in progress at slope area.  Suggestions/Recommendations: - To vegetate/ protect exposed slope immediately. - To plan and provide schedule for maintenance works.	Observation: - Turfing works has been started at some area. However still many exposed slope is observed along relocation. - Riprap works is also in progress at slope area.  Suggestions/Recommendations: - To vegetate/ protect exposed slope immediately. - To plan and provide schedule for maintenance works.	Observation: - Turfing works has been started at some area. However still many exposed slope is observed along relocation. - Riprap works is also in progress at slope area.  Suggestions/Recommendations: - To vegetate/ protect exposed slope immediately. - To plan and provide schedule for maintenance works.	X	
13.	Batching Plant	Oil & Grease; Scheduled Waste (SW)	-	-	Last Maintenance: - 3 June 2013: Repair broken bund	Proposed Action / Action Taken: Oil spillage has been collected as SW and the area has been rectified.  Next Maintenance: Every day morning	Observation: - Oil spill and contaminated soil has yet to be rectified.  Suggestions/Recommendations: - SW to be properly contained, labelled, stored and handled/disposed in accordance to the regulations. - Inventory record to be maintained.	Observation: - Oil spill and contaminated soil has yet to be rectified. - Poor housekeeping is observed. - Silted earth drain is observed.  Suggestions/Recommendations: - To carry out housekeeping and de-silting works immediately. - SW to be properly contained, labelled, stored and handled/disposed in accordance to the regulations. - Inventory record to be maintained.	Observation: - Oil spill and contaminated soil has yet to be rectified. - Housekeeping has yet to be carried out. - Silted earth drain has yet to be desilted.  Suggestions/Recommendations: - To carry out housekeeping and de-silting works immediately. - SW to be properly contained, labelled, stored and handled/disposed in accordance to the regulations. - Inventory record to be maintained.	Observation: - Oil spill and contaminated soil has yet to be rectified. - Housekeeping has yet to be carried out. - Silted earth drain has yet to be desilted.  Suggestions/Recommendations: - To carry out housekeeping and de-silting works immediately. - SW to be properly contained, labelled, stored and handled/disposed in accordance to the regulations. - Inventory record to be maintained.	X

Note: \* To be commented by Engineer

\* Accepted with condition (Suggestions/Recommendations/ Proper improvement measures taken on site accordingly) X Requires improvement actions to be taken immediately

**PHOTOS**

**Areas of Concern on 14 October 2014 and pending issues on 30 September & 01 October 2014**



Plate 1a: Exposed slope along the constructed drain (access road).



Plate 1b: Exposed slope is observed (RHS u/stream of ST-2-01; Saddle Dam A).



Plate 1c: Exposed slope is observed (LHS u/stream of ST-2-01; Saddle Dam A).



Plate 1d: Exposed slope is observed (Main Dam).



Plate 1e: Formation of gullies is observed (RHS Main Dam).



Plate 1f: Exposed slope is observed (d/stream spillway).



Plate 1g: Exposed slope is observed (LHS relocation road CH 2150).



Plate 1h: Exposed slope is observed (LHS & RHS relocation road CH 2150).



Plate 1i: Exposed slope is observed (LHS CH 2650 relocation road).



Plate 2a: Silted drain is observed (behind batching plant-access road).



Plate 2b: Silted earth drain has yet to be de-silted (batching plant).



Plate 3a: Turfing has been dead is observed (Main Dam).



Plate 3b: Turfing has been dead is observed (behind batching plant).



Plate 3c: Turfing has been dead is observed (near to the pipe storage).



Plate 4a: Eroded embankment of silt trap is observed (ST-2-06e).



Plate 4b: Outlet to be eroded is observed (ST-2-18).



Plate 5a: Solid waste is observed scatter around (workers' camp).



Plate 5b: Housekeeping for construction waste has yet to be carried out (draw-off tower).



Plate 5c: Poor housekeeping is observed (batching plant).



Plate 5d: Poor housekeeping is observed (batching plant).



Plate 6a: Poor housekeeping is observed (batching plant).



Plate 6b: Oil spill is observed (batching plant).



Plate 6c: Contaminated geotextile and oil ponding is observed (workers' camp).

**PHOTOS**  
**Areas of Concern on 14 October 2014**



Plate 1a: Remnant of open burning activity is observed (workers' camp near pipe storage).



Plate 1b: Poor housekeeping is observed (drain at workers' camp).



Plate 2a: Silted drain has yet to be de-silted (near main entrance gate).



Plate 2b: Silted silt trap has yet to be de-silted (ST-2-06d).



Plate 3a: Gap is observed at gabion wall (ST-2-16).



Plate 3b: Gap is observed at gabion wall (ST-2-17).



Plate 4a: Exposed slope has yet to be protected (relocation road under bridge).



Plate 4b: Exposed slope has yet to be vegetated (relocation road).



Plate 4c: Exposed slope has yet to be vegetated (relocation road).



Plate 5a: Schedule waste without labelling is observed (workers' camp).



Plate 5b: Oil drums without tray are observed (saddle dam b).

Rectification works



Plate 1a (**Before**): Oil spill is observed (near genset at site office).



Plate 1a (**After**): No more oil spill (near genset at site office).



Plate 1b (**Before**): Contaminated sand is observed in the tray and no labelling (workers' camp).



Plate 1b (**After**): Contaminated sand has been collected (workers' camp).



Plate 2 (**Before**): Remnant of open burning activity is observed (workers' camp).



Plate 2 (**After**): Remnant of open burning activity has been clean up (workers' camp).



Plate 3a (**Before**): Exposed slope has yet to be protected (relocation road near bridge).



Plate 3a (**After**): Riprap works is in progress (relocation road near bridge).



Plate 3b (**Before**): Exposed slope has yet to be vegetated (relocation road).



Plate 3b (**After**): Exposed slope has been turfed (relocation road).



Plate 3c (**Before**): Exposed slope has yet to be vegetated (relocation road).



Plate 3c (**After**): Exposed slope has been turfed (relocation road).

# BMPs Description

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## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES																																																																																																																																																																																																																																																																																																												
<b>PPT</b>	<p><b>PERANCANGAN DAN PENGURUSAN TAPAK</b> <i>(SITE PLANNING &amp; MANAGEMENT)</i></p>																																																																																																																																																																																																																																																																																																												
<b>PPT-1</b>	<p><b>CONSTRUCTION SCHEDULING – PHASING AND SEQUENCING</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <table border="1" style="margin-top: 10px; border-collapse: collapse; width: 100%;"> <thead> <tr> <th>Activity</th> <th>May</th> <th>June</th> <th>July</th> <th>August</th> <th>September</th> <th>October</th> <th>November</th> <th>December</th> <th>January</th> <th>February</th> <th>March</th> </tr> </thead> <tbody> <tr><td>Wash Trough</td><td>Start</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 12</td><td></td><td>Start</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 13</td><td></td><td></td><td>Start</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 14</td><td></td><td></td><td></td><td>Start</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 14</td><td></td><td></td><td></td><td></td><td>Start</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 16</td><td></td><td></td><td></td><td></td><td></td><td>Start</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 16</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Start</td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 17</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Start</td><td></td><td></td><td></td></tr> <tr><td>Plot 17</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Start</td><td></td><td></td></tr> <tr><td>Plot 18</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Start</td><td></td></tr> <tr><td>Plot 18</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Start</td></tr> <tr><td>Plot 19</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 21</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 22</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 23</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 24</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 26</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 27</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Plot 28</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Road 12</td><td>Start</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Road 18</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Road 18</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> </div> <div style="width: 50%;"> <p style="text-align: center;">SCALE: 1:50000</p> <p style="text-align: center;">CONSTRUCTION SCHEDULE</p> <p style="text-align: center;">JUNE JULY AUG SEP OCT NOV DEC JAN FEB</p> <p style="text-align: right;">MP-1</p> <p>LEGEND:</p> <ul style="list-style-type: none"> <li>FINISHED SURFACE</li> <li>TEMPORARY EROSION CONTROL</li> <li>SEDIMENT SHEDS</li> <li>EXCAVATION</li> <li>CLAYING AND CAPPING</li> <li>SOIL STABILISATION</li> <li>TEMPORARY VEGETATION</li> <li>PERMANENT VEGETATION</li> <li>BUILDING STRUCTURE CONSTRUCTION</li> <li>TEMPORARY CONSTRUCTION</li> <li>PERMANENT CONSTRUCTION</li> <li>LAND USE</li> </ul> </div> </div>	Activity	May	June	July	August	September	October	November	December	January	February	March	Wash Trough	Start											Plot 12		Start										Plot 13			Start									Plot 14				Start								Plot 14					Start							Plot 16						Start						Plot 16							Start					Plot 17								Start				Plot 17									Start			Plot 18										Start		Plot 18											Start	Plot 19												Plot 20												Plot 21												Plot 22												Plot 23												Plot 24												Plot 25												Plot 26												Plot 27												Plot 28												Road 12	Start											Road 18												Road 18											
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### DEFINITION

A specified work schedule that coordinates the timing of land-disturbing activities and the installation of erosion and sedimentation control measures.

### PURPOSE

To reduce on-site erosion and off-site sedimentation by performing land disturbing activities, and installing erosion and sedimentation control practices in accordance with a planned schedule.

### APPLICATION

- All land-development projects.
- Project implementation schedule should use any commercial project software that contains construction activities, construction sequences, duration, date of start and completion.
- Project monitoring (tracking system) shall be done according to work progress.

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES		
<b>PPT</b>	<b>PERANCANGAN DAN PENGURUSAN TAPAK (SITE PLANNING &amp; MANAGEMENT)</b>		
<b>PPT-2</b> <b>PRESERVATION OF EXISTING TREES AND VEGETATION</b> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span><b>TREES</b></span> <span><b>VEGETATION</b></span> <span><b>VEGETATED FILTER STRIP (VFS)</b></span> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;">    </div> <p><b>DEFINITION</b></p> <p>Preservation of existing vegetation relates to the identification and protection of desirable vegetation such as trees, shrubs and plants, native vegetation and natural Vegetated Filter Strip (VFS).</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To minimize disturbances on construction sites,</li> <li>• To stabilize soil,</li> <li>• To trap suspended particles from sheet flow runoff,</li> <li>• To promote infiltration of storm water.</li> </ul> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Areas within the site where no construction activity is occurring.</li> <li>• Areas where existing vegetation can be utilized for erosion and sediment control.</li> </ul>			

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>PPT</b>	<b>PERANCANGAN DAN PENGURUSAN TAPAK (SITE PLANNING &amp; MANAGEMENT)</b>
<b>PPT-3</b>	<p><b>ON-SITE SOURCES CONTROL</b></p> <p><b>I TOPSOIL</b></p>  <p><b>II ROCKS &amp; STONES</b></p>  <p><b>III BIOMASS</b></p>  <p><b>IV TREES SALVATION</b></p> 

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

### V NURSERY



#### DEFINITION

Explore the existing site sources that can benefit the potential material for erosion control such as topsoil, rocks, biomass, existing vegetation and make use of existing native vegetation to establish seedbed preparation or grass growing and plant nursery.

#### PURPOSE

To make use of the existing site sources materials for erosion and sediment control which may minimize cost and time in the materials procurement.

#### APPLICATION

Applicable on most of construction sites and is extremely recommended for anticipated prolonged land disturbing activities such as those occurring in highway and hydroelectric projects.

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES	
<b>KALP</b>	<b>KAWALAN AIR LARIAN PERMUKAAN <i>(RUNOFF CONTROL)</i></b>	
<b>KALP-1</b>	<p><b>EARTH BANK/ PERIMETER DIKE</b></p> <p style="text-align: center;"><b>RUN-ON</b></p>  <p style="text-align: center;"><b>RUNOFF</b></p> 	<p><b>DEFINITION</b></p> <p>A temporary berm, dike, embankment or ridge of compacted soil, located in such a manner as to intercept, divert and channel water to a desired location.</p> <p><b>PURPOSE</b></p> <p>To direct runoff to a sediment trapping device or to direct run-on (clean water) around the site and away from disturbed areas, thereby reducing the potential for erosion and off site sedimentation.</p> <p><b>APPLICATION</b></p> <p>Earth dikes are often constructed across disturbed areas and around construction sites. The dikes shall remain in place until the disturbed areas are permanently stabilized.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP</b>	<b>KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>
<b>KALP -2</b>	<p><b>DIVERSION</b></p>  <p><b>DEFINITION</b></p> <p>A channel of compacted soil constructed above, across, or below a slope, with a supporting earthen ridge on the lower side.</p> <p><b>PURPOSE</b></p> <p>To reduce the erosion of steep or otherwise highly erodible areas by reducing slope lengths, intercepting storm runoff and diverting it to a stable outlet at a non-erosive velocity, or to convey storm water through a construction site.</p> <p><b>APPLICATION</b></p> <p>Diversions are applicable where:</p> <ul style="list-style-type: none"> <li>• The slope length needs to be reduced to minimize erosion.</li> <li>• Runoff from upslope areas is, or has the potential for, damaging property, flooding, or preventing the establishment of vegetation on lower areas.</li> <li>• Clean storm water is coming onto the site and needs to be conveyed across or around the disturbed area to prevent contamination.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP</b>	<b>KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>
<b>KALP -3</b>	<p><b>LINED WATERWAY (ROCK MATERIALS)</b></p>  <p><b>DEFINITION</b></p> <p>A waterway or outlet with a lining of rock, stone, or other permanent material. The lined section extends up the side slopes to the designed depth. The earth above the permanent lining may be vegetated or otherwise protected.</p> <p><b>PURPOSE</b></p> <p>To provide for the disposal of concentrated runoff without damage from erosion or flooding, where grassed waterways would be inadequate due to high velocities.</p> <p><b>APPLICATION</b></p> <p>This practice applies where the following or similar conditions exist:</p> <ol style="list-style-type: none"> <li>1. Concentrated runoff is such that a lining is required to control erosion.</li> <li>2. Steep grades, prolonged base flow, seepage, or piping that would cause erosion.</li> </ol>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>	
<b>KALP 4 CATCH DRAIN</b>	<p><b>DEFINITION</b></p> <p>A drain running along the side of a road or track to collect runoff from the road/track surface.</p> <p><b>PURPOSE</b></p> <p>To prevent silt from overflowing to road surfaces, the bare earth strip between the drain and the road must be turfed to serve as a buffer strip.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• At the base of cut or fill slopes to direct sediment-laden flows to sediment traps.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>	
<b>KALP 5 CASCADING DRAIN</b>	<p><b>DEFINITION</b></p> <p>These are concrete stepped catch drains laid on the steep terraced slopes.</p> <p><b>PURPOSE</b></p> <p>To guide flows from the berm drains down to catch drains at the base.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Any cut and fill slopes at construction sites where there is a need to channel concentrated flow down slopes.</li> </ul>

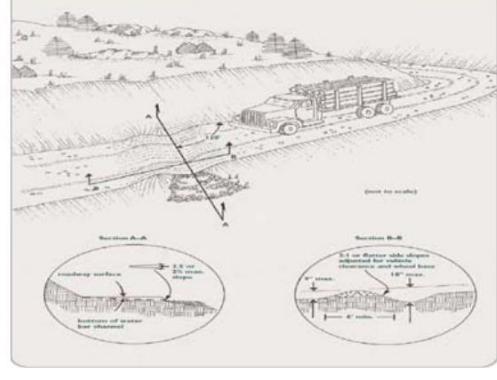
## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP</b>	<b>KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>
<b>KALP -6</b>	<p><b>RIPRAP</b></p>   <p><b>DEFINITION</b></p> <p>Riprap is a layer of large stones laid onto slopes and channel beds.</p> <p><b>PURPOSE</b></p> <p>To protect soil from erosion in areas of concentrated runoff.</p> <p><b>APPLICATION</b></p> <p>Use riprap to stabilize cut-and-fill slopes with 1:2 slope; channel side slopes and bottoms; inlets and outlets for culverts, bridges, slope drains, grade stabilization structures, and storm drains; and streambanks and grades.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP</b>	<b>KAWALAN AIR LARIAN PERMUKAAN</b>  <b>(RUNOFF CONTROL)</b>
<b>KALP 7</b>	<p><b>CHECK DAM</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p><b>DEFINITION</b></p> <p>A check dam is a small temporary device constructed of rock, sandbags, or fiber rolls, placed across a natural or man-made channel or drainage ditch.</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To reduce the velocity of concentrated stormwater flows,</li> <li>• To trap small amounts of sediment generated in the conveyances</li> <li>• To reduce scour and channel erosion.</li> <li>• To encourage sediment dropout.</li> </ul> <p><b>APPLICATION</b></p> <p>Any stormwater conveyances having concentrated flow.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>	
<b>KALP 8 TEMPORARY INTERCEPTOR DIKE</b> <b>ROLLING DIP</b>	<b>WATER BAR</b>   <p><b>Right-Of-Way Diversions (Water Bars)</b></p> <p><b>DEFINITION</b></p> <p>Water bar defines a ridge and channel constructed diagonally across a sloping road that is subject to erosion and may be referred to as rolling dips depending on the features constructed.</p> <p><b>PURPOSE</b></p> <p>To limit the flow accumulation of erosive volumes of water by draining and dispersing road surface runoff to prevent surface erosion.</p> <p><b>APPLICATION</b></p> <p>Where runoff protection is needed to prevent erosion on sloping access rights of way or other long, narrow sloping areas generally less than 30 metres in width.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>	
<b>KALP 9 SWALES</b>	<p><b>DEFINITION</b></p> <p>Swales are temporary or permanent channel, which may be lined with natural vegetation, synthetic materials, or rock.</p> <p><b>PURPOSE</b></p> <p>To slowly convey runoff to a discharge point located downstream to minimize erosion.</p> <p><b>APPLICATION</b></p> <p><b>Where there is a need to :</b></p> <ul style="list-style-type: none"> <li>• Divert flows away from a disturbed area and to a stabilized area.</li> <li>• Intercept sediment laden water and divert it to a sediment trapping device.</li> <li>• Intercept runoff from paved or sloped surfaces.</li> <li>• Convey surface runoff down sloping land.</li> <li>• Divert clean run-on from adjacent or undisturbed slopes.</li> </ul> 

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP</b>	<b>KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>
<b>KALP 10</b>	<p><b>TEMPORARY AND PERMANENT PIPE SLOPE DRAIN</b></p>  <p><b>DEFINITION</b></p> <p>A temporary or permanent pipe structure placed from the top of a slope to the bottom of a slope. A heavy duty flexible pipe or conduit such as non-perforated, corrugated plastic pipe or specially designed flexible tubing should be used.</p> <p><b>PURPOSE</b></p> <p>To convey storm water runoff down the face of a cut or fill slope without causing erosion on or below the slope.</p> <p><b>APPLICATION</b></p> <p>Temporary slope drains are used where sheet or concentrated storm water flow could cause erosion as it moves down the face of a slope.</p>

**JADUAL 2 : PENERANGAN BMPs**  
**(BMPs DESCRIPTION)**

Item BMPs Coding	PRACTICES
	<p><b>KALP KAWALAN AIR LARIAN PERMUKAAN</b>  <i>(RUNOFF CONTROL)</i></p>
<b>KALP</b> <b>11</b>	<p><b>ROCK OUTLET PROTECTION</b></p>  <p><b>DEFINITION</b></p> <p>Paved and/or riprapped channel treatment, placed below storm drain outlets or any discharge outlets.</p> <p><b>PURPOSE</b></p> <p>To reduce storm water velocity and dissipate the energy of flow leaving a storm drain or discharge outlets before it empties into receiving channels,</p> <p>To prevent scour at storm water outlets and to minimize the potential for downstream erosion through velocity dissipation.</p> <p><b>APPLICATION</b></p> <p>Applicable to all storm drain outlets, road culverts, paved channel outlets and discharge outlets.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICE
<b>KALP KAWALAN AIR LARIAN PERMUKAAN</b>  <b>(RUNOFF CONTROL)</b>	
<b>KALP</b> <b>SAND BAG BARRIER</b> <b>12</b>	<p><b>DEFINITION</b></p> <p>A sandbag barrier is a temporary linear sediment barrier consisting of stacked sandbags placed around site perimeter and active worksite.</p> <p><b>PURPOSE</b></p> <p>To intercept and slow the flow of sediment-laden sheet flow runoff.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Along the perimeter of a site.</li> <li>• Along streams and channels with appropriate setback distance.</li> <li>• Below the toe or down slope of exposed and erodible slopes.</li> <li>• Around stockpiles.</li> <li>• At the top of slopes to divert roadway runoff away from disturbed slopes.</li> <li>• Where flows are moderately concentrated, such as ditches, swales, and storm drain inlets to divert and/or detain flows.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KALP</b>	<b>KAWALAN AIR LARIAN PERMUKAAN (RUNOFF CONTROL)</b>
<b>KALP</b> <b>13</b>	<p><b>STORM DRAIN INLET PROTECTION</b></p>  <p><b>DEFINITION</b></p> <p>Measures such as silt fence, sandbag, and fiber roll, installed around any storm drain inlet;</p> <p><b>PURPOSE</b></p> <p>To reduce stormwater velocity and detain or filter sediment-laden runoff to allow sediment to settle prior to discharge.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Where ponding water will not encroach into highway traffic.</li> <li>• Where sediment laden surface runoff may enter an inlet.</li> <li>• Where disturbed drainage areas have not yet been permanently stabilized.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KH</b>	<b>KAWALAN HAKISAN</b>  <b>(EROSION CONTROL)</b>
<b>KH 1</b>	<p><b>MULCHING</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p><b>DEFINITION</b></p> <p>The application of plant residues or other suitable materials to the soil surface as ground cover. When applying mulch materials with water and glue, the application is referred to as hydromulch.</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To prevent erosion by protecting the soil surface from raindrop impacts and reducing the velocity of overland flow.</li> <li>• To foster the growth of vegetation by increasing available moisture and providing insulation against extreme heat.</li> </ul> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Any bare and/or disturbed area subject to next intended construction activities to proceed in more than 30 days</li> <li>• Any seeded area to promote growth.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KH      KAWALAN HAKISAN</b>  <b>(EROSION CONTROL)</b>	
<b>KH-2    REVEGETATION</b> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div> <p><b>DEFINITION</b></p> <p>The establishment of temporary vegetative cover with fast growing species for seasonal protection on disturbed or denuded areas.</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To reduce storm water runoff velocity and maintain sheet flow</li> <li>• To protect the soil surface from erosion</li> <li>• To promote infiltration of runoff into the soil</li> </ul> <p><b>APPLICATION</b></p> <p>Any completed graded area such as bare area, slope surfaces and areas meant to be vegetated permanently.</p>	

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KH      KAWALAN HAKISAN  (EROSION CONTROL)</b>	
KH-3    HYDROSEEDING	<p></p> <p><b>DEFINITION</b> Hydroseeding or may also be called hydromulching ( if no seed is applied) is a mechanical method with forced water of applying seed, fertilizer, and mulch to land in one step in order to re-vegetate.</p> <p><b>PURPOSE</b> To temporarily protect exposed soils from erosion.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• On any cleared soil surface where vegetative cover is needed which includes diversions berms and embankment, dams, temporary sediment basins, temporary road banks, and topsoil stockpiles.</li> <li>• Where areas need temporary stabilization before final stabilization is installed.</li> <li>• On disturbed areas that will be re-disturbed after a period of extended inactivity.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KH      KAWALAN HAKISAN <i>(EROSION CONTROL)</i></b>	
<b>KH-4    RIP-RAP SLOPE PROTECTION</b>	<p><b>DEFINITION</b></p> <p>A layer of stone placed on slopes or streambanks.</p> <p><b>PURPOSE</b></p> <p>To protect the soil surface from erosive forces and/or improve the stability of soil slopes.</p> <p><b>APPLICATION</b></p> <p>Where cut and fill slopes are subject to seepage, erosion, or weathering, particularly where conditions prohibit the establishment of vegetation.</p> 

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KH      KAWALAN HAKISAN  (EROSION CONTROL)</b>	
<b>KH - 5    PLASTIC COVER</b>	<p></p> <p><b>DEFINITION</b></p> <p>Plastic cover material commonly made of polyethylene which is used in conjunction with weights, stakes or rebar temporarily placed on slopes or stockpiles..</p> <p><b>PURPOSE</b></p> <p>To be used for temporary soil stabilization.</p> <p>To prevent infiltration of surface waters onto unstable slope.</p> <p><b>APPLICATION</b></p> <p>Any incomplete slope that is going to be attended to at a later time.</p>

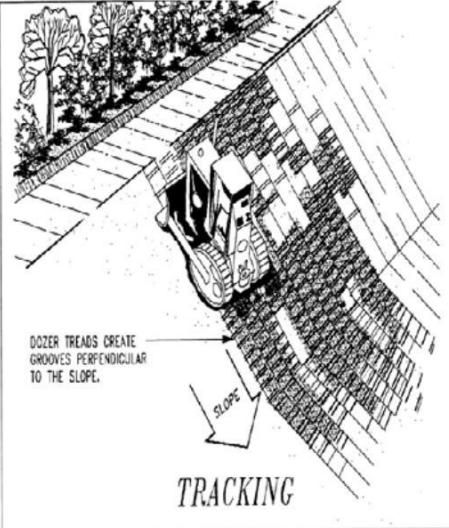
## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KH      KAWALAN HAKISAN  (EROSION CONTROL)</b>	
<b>KH-6    EROSION CONTROL BLANKET / MAT</b> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p><b>DEFINITION</b></p> <p>A protective blanket or soil stabilization mat used to assist in establishment of temporary or permanent vegetation on steep slopes, channels, or stream banks.</p> <p><b>PURPOSE</b></p> <p>To protect soil and hold seed and mulch in place on slopes and in channels so that vegetation can become well established.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• On steep slopes where erosion hazards are high.</li> <li>• Where conventional seeding is likely to be too slow in providing adequate protective cover.</li> </ul>	

## **JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)**

	<ul style="list-style-type: none"><li>• Concentrated flow areas.</li><li>• All slopes steeper than 1:2, with a height of three metres or greater, and cuts and fills within stream buffers, should be stabilized with the appropriate erosion control matting or blanket.</li></ul> <p><b>Notes</b></p> <ul style="list-style-type: none"><li>• Turf reinforcement mats can be used to permanently reinforce grass in drainage ways during high flows. It consists a permanent, non-degradable, three-dimensional plastic structure that is filled with soil prior to planting</li><li>• Nets are made of high tensile material woven into an open net which overlays mulch materials.</li><li>• Blankets are made of interlocking fibers, typically held together by a biodegradable or photodegradable netting (for example, excelsior or straw blankets). They generally have lower tensile strength than nets, but cover the ground more completely.</li><li>• Coir (coconut fiber) fabric comes as both nets and blankets.</li></ul>
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## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KH</b>	<b>KAWALAN HAKISAN</b>  <b>(EROSION CONTROL)</b>
<b>KH-7</b>	<p><b>SURFACE ROUGHENING</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p><b>DEFINITION</b></p> <p>The use of mechanized equipment to roughening the soil on a bare slope with grooves or terraces that run perpendicular to the direction of the slope.</p> <p><b>PURPOSE</b></p> <p>To loosen compacted soil on a slope that has been cleared and graded, cut, or filled as well as creates small grooves or terraces which reduce runoff velocity, trap seed, fertilizer and sediment, and provide more favourable conditions for vegetation establishment.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• On slopes steeper than 1:3,</li> <li>• On excavated soil stockpiles</li> <li>• In areas with highly erodible soils.</li> <li>• Appropriate for soils that are frequently moved or disturbed.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KS</b>	<b>KAWALAN SEDIMEN</b>  <b>(SEDIMENT CONTROL)</b>
<b>KS -1</b>	<p><b>SEDIMENT TRAP / BASIN</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p><b>DEFINITION</b></p> <p>A sediment trap is a temporary basin with a controlled release structure, formed by excavating or constructing an earthen embankment across a waterway or low drainage area.</p> <p><b>PURPOSE</b></p> <p>To detain sediment-laden runoff from small disturbed areas long enough to allow most of the sediment to settle out, thus protecting drainageways, properties, and rights of way from sedimentation.</p> <p><b>APPLICATION</b></p> <p>All points of discharges from any disturbed area at construction sites.</p>

## **JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)**

	<p><b>Notes</b></p> <p>Sediment traps can be constructed either by excavation or embankment. Each sediment trap is named according to the type of outlet that it has. The outlets shall be designed, constructed, and maintained so that sediment does not leave the trap and erosion of the outlet does not occur. There are four types of outlets for sediment traps namely :</p> <p class="list-item-l1">1. <b>An Earth Outlet Sediment Trap</b></p> <p>The trap has a discharge point over or cut into natural ground.</p> <p class="list-item-l1">2. <b>A Pipe Outlet Sediment Trap</b></p> <p>The outlet for the trap is though a perforated riser and a pipe through the embankment. The outlet pipe and riser shall be made of corrugated metal.</p> <p class="list-item-l1">3. <b>A Stone Outlet Sediment Trap</b></p> <p>The outlet for the sediment trap shall consist of a crushed stone section of the embankment located at the low point in the basin. The outlet shall be constructed of crushed stone.</p> <p class="list-item-l1">4. <b>A Storm Inlet Sediment Trap</b></p> <p>The trap has a discharge point through an opening in a storm drain inlet structure. This opening can either be the inlet opening or a temporary opening made by omitting bricks or blocks in the inlet.</p>
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## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES		
<b>KS</b>	<b>KAWALAN SEDIMEN</b>  <b>(SEDIMENT CONTROL)</b>		
<b>KS -2</b>	<b>CONSTRUCTION ENTRANCE STABILIZATION</b> <p style="text-align: center;"><b>RUMBLE PAD</b>      <b>JET-SPRAY</b>      <b>WASH TROUGH</b></p>   		

### **DEFINITION**

A stabilized pad located at points where vehicles enter and leave a construction site. This control may take the form of tracking pads, boards, rumble strips, washes or through pool of water.

### **PURPOSE**

To reduce or eliminate the amount of sediment transported onto public roadways by motor vehicles or runoff.

### **APPLICATION**

- All points of construction ingress and egress.
- Wherever traffic will be leaving a construction site and moving directly onto a public road or other paved area.

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KS</b>	<b>KAWALAN SEDIMEN <i>(SEDIMENT CONTROL)</i></b>
<b>KS-3</b>	<p><b>CONSTRUCTION ROAD STABILIZATION (GRAVELLING)</b></p>   <p><b>DEFINITION</b></p> <p>A stabilized construction roadway is a temporary access connecting existing public roads to a remote construction area.</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To provide a fixed stable route for the heavy construction traffic</li> <li>• To reduce erosion and subsequent re-grading of permanent roadbeds between the time of initial grading and final stabilization.</li> <li>• To stabilize soils on which a travel way is constructed of which may severely eroded and rutted created by vehicular tracking.</li> </ul> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Applicable whenever travel ways are needed around poor soils area in a construction site of which the exposed soil is continually disturbed which eliminating the possibility of stabilization with vegetation.</li> <li>• Any anticipated extended period of exposure of roadways to surface runoff around the construction site.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES	
<b>KS</b>	<b>KAWALAN SEDIMEN</b>  <b>(SEDIMENT CONTROL)</b>	
<b>KS-4</b>	<b>FIBER ROLLS, COIRLOG OR</b> 	<b>WATTLES</b> 

### **DEFINITION**

A fiber roll consists of straw, flax, coconut husk or other similar materials that are rolled and bound into a tight tubular roll and placed around the worksite perimeter and is referred to as wattles when placed on the face of slopes at regular intervals.

### **PURPOSE**

- To intercept runoff.
- To reduce runoff flow velocity.
- To release the runoff as sheet flow.
- To provide some removal of sediment from the runoff.

### **APPLICATION**

- May be used along the top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- Install on disturbed areas that require immediate erosion protection.
- Can be used along the perimeter of a project.
- Unlined ditches as a check dam
- Around temporary stockpiles

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KS</b>	<b>KAWALAN SEDIMEN</b>  <b>(SEDIMENT CONTROL)</b>
<b>KS-5</b>	<p><b>SILT FENCE</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p><b>DEFINITION</b></p> <p>A silt fence is a temporary sediment barrier made of woven, synthetic filtration fabric stretched across and attached to supporting wood or steel posts and entrenched.</p> <p><b>PURPOSE</b></p> <p>To prevent sediment carried by sheet flow from leaving the site and entering natural drainage ways or storm drainage systems by slowing storm water runoff and causing the deposition of sediment at the structure. Silt fencing encourages sheet flow and reduces the potential for development of rills and gullies.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Whenever to intercept, divert and capture sediment from sheet flow runoff.</li> <li>• Below the toe of exposed and erodible slopes.</li> <li>• Down-slope of exposed soil areas.</li> <li>• Around temporary stockpiles.</li> <li>• Along streams and channels.</li> </ul>

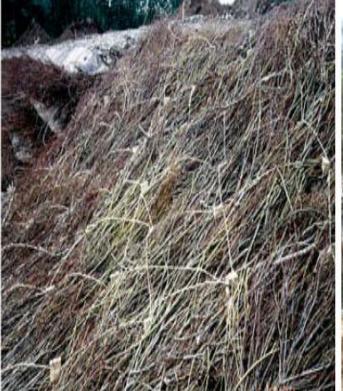
## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KS</b>	<b>KAWALAN SEDIMEN</b>  <b>(SEDIMENT CONTROL)</b>
<b>KS-6</b>	<p><b>TURBIDITY CURTAIN</b></p>   <p><b>DEFINITION</b></p> <p>A flexible floating permeable fabric or geotextile materials namely turbidity curtains/ silt curtain/barriers installed in watercourses and is placed parallel or perpendicular to the direction of flow .This curtain does not extend to the bottom and weighted or anchored down to achieve closure while supported at the top through a flotation system..</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To provide sediment containment or sedimentation protection for a watercourse.</li> <li>• To prevent the migration of silt from a work site in a water environment into the larger body of water.</li> <li>• To reduce or eliminate debris and turbidity and minimize sediment transport from a disturbed area adjacent to or within a body of water</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

	<p><b>APPLICATION</b></p> <p>Where construction activities occurs within a water body or along its shoreline or directly adjacent to a waterway or water body and is of short duration. The activities includes but is not limited to bridge construction, rip rap placement, utility work, stream bank restoration and dredging. Turbidity or silt curtains are used in calm water surfaces and <b>i n most situations, turbidity curtains should not be installed across channel flows or flowing watercourses.</b></p>
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## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KS</b>	<b>KAWALAN SEDIMEN</b>  <b>(SEDIMENT CONTROL)</b>
<b>KS-7</b>	<p><b>BRUSH BARRIER / MATTING</b></p> <div style="display: flex; justify-content: space-around;">    </div> <p><b>DEFINITION</b></p> <p>A temporary sediment barrier constructed at the perimeter of a disturbed area or on slope surface from the residue materials available from clearing and grubbing the site.</p> <p><b>PURPOSE</b></p> <p>By properly packed and stacked, the branches layer placed on the berm or terrace step and covering the slope as mat may function to intercept and retain sediment from disturbed areas of limited extent, preventing sediment from leaving the site.</p> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"> <li>• Below disturbed areas subject to sheet and rill erosion,</li> <li>• Where the size of the drainage area is no greater than one-fourth of an acre per 100 feet of barrier length; the maximum slope length behind the barrier is 100 feet; and the maximum slope gradient behind the barrier is 50 percent (1:2).</li> <li>• On slope surfaces having gradient no steeper than 1:2.</li> </ul>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KS</b>	<b>KAWALAN SEDIMEN <i>(SEDIMENT CONTROL)</i></b>
<b>KS-8</b>	<p><b>ACTIVE TREATMENT SYSTEM:</b></p> <p><b>PUMP, CHEMICAL DOSING / PAM POLYMER, FLOCCULATION &amp; GEO-TUBE</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p><b>DEFINITION</b></p> <p>PAM is a water-soluble anionic polyacrylamide product are manufactured in various forms such as emulsion, liquid, powder and block used as soil stabilization and as a water treatment additive.</p> <p>Active treatment system refers to the water treatment process of which, the sediment-laden runoff collected in pond are pump into a container (geo-tube bag). In the process of pumping the turbid waters, online injection of site-specific polymers/PAM are introduce to the turbid waters in such a manner to facilitate mixing and reaction between the polymer and the suspended particles. Upon reaching into the geo-tube bag, the turbid waters will start to coagulate and subsequently flocculate or agglomerate stage proceeds in the pipe line and bag. A pulsing pump used to pressure the geo-tube bag leading to permeation of clear water through the geo-tube bag container wall or also known as dewatering bag leaving the sediment behind.</p>

## **JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)**

	<p><b>PURPOSE</b></p> <ul style="list-style-type: none"><li>• To bind and stabilize soil particles.</li><li>• To treat turbid water prior to discharge into receiving watercourse.</li></ul> <p><b>APPLICATION</b></p> <ul style="list-style-type: none"><li>• Any bare areas that need to be immediately stabilized.</li><li>• Along the runoff conveyances that lead to sediment trapping device.</li><li>• Recommended for use when treatment of sediment-laden runoff especially dealing with fine clay soil type using sediment basin BMPs are not effective enough to reduce the turbidity and suspended solids in the water prior to be discharge into the watercourse.</li></ul>
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## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KS</b>	<b>KAWALAN SEDIMEN</b>  <b>(SEDIMENT CONTROL)</b>
<b>KS-9</b>	<p><b>TEMPORARY ACCESS WATERWAY: BRIDGE AND CULVERT</b></p>  <p><b>DEFINITION</b></p> <p>A temporary stream crossing is a structure placed across a waterway, which allows vehicles to cross the waterway during construction without entering the water, eliminating erosion and downstream sedimentation caused by the vehicles.</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To provide safe, environmentally sound access across a waterway for construction equipment.</li> <li>• To prevent construction equipment from damaging the waterway, blocking fish migration, and tracking sediment and other pollutants into the waterway.</li> </ul> <p><b>APPLICATION</b></p> <p>Where heavy construction must be moved from one side of a stream channel to the other and equipment and construction vehicles will cross the stream repeatedly during construction.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
<b>KLL</b> <b>KAWALAN LAIN-LAIN</b>  <i>(OTHERS- GENERAL CONSTRUCTION CONTROL)</i>	
<b>KLL -1</b> <b>CONSTRUCTION FENCE</b> <div style="display: flex; justify-content: space-around; align-items: center;">   <p style="margin: 0; font-size: small;">10/03/2005</p> </div> <p><b>DEFINITION</b></p> <p>Any approved fencing materials for construction sites.</p> <p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>• To control access to the construction site pertaining to safety factors.</li> <li>• To delineate limits of construction and land disturbing activities.</li> <li>• To reflect site boundary.</li> </ul> <p><b>APPLICATION</b></p> <p>Applicable to all construction sites.</p>	

## **JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)**

<b>KLL -2</b>	<b>LIMITS OF CONSTRUCTION</b>    <b>DEFINITION</b>  Identification marker or flagged area of all limits of construction as such along the perimeters of site, along all stream corridors or reserve to be preserved and around any other areas planned for preservation zones.  <b>PURPOSE</b>  <ul style="list-style-type: none"><li>• The planned disturbance and non-disturbance areas will be physically visible and known by all parties involved in the working area.</li><li>• This will physically delineates areas and clearly limits the construction activities that can take place while limiting the disturbed area to the minimum deemed necessary.</li></ul> <b>APPLICATION</b>  <ul style="list-style-type: none"><li>• Any limits of working area at construction sites.</li><li>• Non-disturbance areas around the construction sites.</li><li>• Existing vegetation areas to be preserved.</li></ul>
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**JADUAL 2 : PENERANGAN BMPs**  
**(BMPs DESCRIPTION)**

Item BMPs Coding	PRACTICES
KLL	<b>KAWALAN LAIN-LAIN</b>
KLL -3	<p><b>CONCRETE WASHOUT AREA</b></p>  <p><b>DEFINITION</b></p> <p>A designated area for concrete washout area.</p> <p><b>PURPOSE</b></p> <p>To minimize or eliminate the discharge of concrete waste materials that normally contain high pH (alkaline base slurry) to the storm drain system or to watercourses.</p> <p><b>APPLICATION</b></p> <p>On construction projects where concrete is used as a construction material where the most common, the ready-mix concrete mixer truck and other concrete-coated equipment are washed on site.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

KLL-4	<b>VEHICLE AND EQUIPMENT FUELING AND MAINTENANCE</b>
	 <p><b>DEFINITION</b></p> <p>Vehicle and equipment fueling and maintenance involves repair work, maintenance, fueling, and cleaning to be conducted in designated location.</p> <p><b>PURPOSE</b></p> <p>To trap and prevent any fluids used/collected/spills in these processes from being introduced to storm water flow.</p> <p><b>APPLICATION</b></p> <p>These procedures are applied on all construction sites where vehicle and equipment fueling and maintenance take place.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

KLL-5	<b>SOLID WASTE MANAGEMENT AREA</b>   11/25/2005
	<b>DEFINITION</b>  These are procedures and practices to collect and dispose all construction sites waste at a designated location and containers/trash bin.  <b>PURPOSE</b>  To prevent the littering and mosquitoes breeding at site. To minimize or eliminate the discharge of pollutants such as leachates into the drainage system or to watercourses.  <b>APPLICATION</b>  Solid waste management practices are implemented on all construction projects that generate solid wastes.

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
KLL	KAWALAN LAIN-LAIN
KLL-6	<p><b>SPOIL MANAGEMENT AREA</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p><b>DEFINITION</b></p> <p>Spoil management area is an area designated for landfill or disposal of earthen material that is surplus to requirements or unsuitable for reuse in fill and embankments (such as unsuitable rock and soil material) or material that is contaminated from construction site or dredged materials of a sediment basin that located onsite or relocated elsewhere as compacted fill.</p> <p><b>PURPOSE</b></p> <p>To establish a document and describe the systems and procedures developed to mitigate environmental impacts during handling, transportation, stockpiling and disposal of spoil materials such as develops or prepares a separate ESCP.</p> <p><b>APPLICATION</b></p> <p>Implemented in all projects that generates surplus of earthen materials, unsuitable materials and biomass. Spoil management area should be located on relatively flat land, in areas away from watercourse, away from threatened plant species and fauna habitat areas, away from steep slopes and gullies, upstream of sediment basins; and so that material is easily accessible and may be retrieved at any time.</p>

**JADUAL 2 : PENERANGAN BMPs**  
**(BMPs DESCRIPTION)**

Item BMPs Coding	PRACTICES
KLL	KAWALAN LAIN-LAIN
KLL-7	<p><b>STABILIZED STAGING AREA</b></p>  <p><b>DEFINITION</b></p> <p>A stabilized staging area consists of stripping topsoil and spreading a layer of gravel or crusher run or recycled concrete in the area to be used for a trailer, parking, storage, unloading/loading and temporary site office area.</p> <p><b>PURPOSE</b></p> <p>To stabilize staging area and reduces the likelihood that the vehicles most frequently entering a site are going to come in contact with mud.</p> <p><b>APPLICATION</b></p> <p>Implemented in all projects.</p>

**JADUAL 2 : PENERANGAN BMPs**  
**(BMPs DESCRIPTION)**

Item BMPs Coding	PRACTICES
KLL	KAWALAN LAIN-LAIN
KLL-8	<p><b>SCHEDULE WASTE MANAGEMENT AREA</b></p>  <p><b>DEFINITION</b></p> <p>A designated area for storage of hazardous waste.</p> <p>The procedures and practices and handling must conforms to</p> <p><b>PURPOSE</b></p> <p>To minimize or eliminate the discharge of pollutants from construction site generating hazardous waste to the storm drain system or to watercourses.</p> <p>To conform and comply the requirements stipulated in Environmental Quality Regulation (Scheduled Waste) 1989.</p> <p><b>APPLICATION</b></p> <p>Implemented in all projects that generates scheduled wastes.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

KLL-9	<p><b>MATERIAL STORAGE CONTROL AND STOCKPILE MANAGEMENT</b></p>  <p>12/13/2005</p> <p><b>DEFINITION</b></p> <p>A designated area for storage of materials and stockpiles such as soil, paving materials, Pesticides and herbicides, Fertilizers, Detergents, Plaster, Petroleum products such as fuel, oil, and grease, Asphalt and concrete components, Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds, Concrete compounds and other materials that may be detrimental if released to the environment.</p> <p><b>PURPOSE</b></p> <p>To reduce or eliminate pollution potential of storm water and dusting from stockpiles. To promote a good housekeeping practice. To protect all stockpiles from storm water run-on using a perimeter sediment barrier such as berms, dikes, silt fences, or sandbag barriers, placing certain materials on pallets and cover.</p> <p><b>APPLICATION</b></p> <p>Implemented in all projects that having storage of constructions and stockpile materials.</p>
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## **JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)**

<b>KLL-10</b>	<b>SANITARY WASTE MANAGEMENT</b>
	 <p><b>DEFINITION</b></p> <p>The use of temporary toilet at construction site approved by the authority.</p> <p>Procedures and practices</p> <p><b>PURPOSE</b></p> <p>To eliminate the discharge of construction site sanitary/septic waste materials directly to the storm drain system or to watercourses without firstly treated to a standard requirement and compliance.</p> <p><b>APPLICATION</b></p> <p>Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary/septic waste systems. Temporary sanitary facilities shall be located away from drainage facilities, watercourses, and from traffic circulation.</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

Item BMPs Coding	PRACTICES
KLL	KAWALAN LAIN-LAIN
KLL-11	<p><b>SPILL PREVENTION AND SECONDARY CONTAINMENT</b></p> <div style="display: flex; justify-content: space-around;">   </div> <p><b>DEFINITION</b></p> <p>A second containment wall or embankment constructed with concrete or pre-fabricated metal that fencing around any petroleum base products with the containment capacity of 110 % the capacity of the said vessel or tank.</p> <p><b>PURPOSE</b></p> <p>To failsafe the primary containment (vessel or tank wall) that leaks or spills from flowing out further into drainageway or watercourses before recovering action to be taken.</p> <p><b>APPLICATION</b></p> <p>Applies to petroleum-based storage vessels, including fuel, and hydraulic fluid and certain tanks sited at jobsite..</p>

## JADUAL 2 : PENERANGAN BMPs (BMPs DESCRIPTION)

KKL-12 DUST CONTROL & STREET CLEANING	
 	<p><b>DEFINITION</b></p> <p>Practices to collect and remove tracked sediments that have escaped the perimeter of the construction site.</p> <p><b>PURPOSE</b></p> <p>To prevent the sediment from entering a storm drain or watercourse as well as to prevent dust blowing and movement on construction sites and roads.</p> <p><b>APPLICATION</b></p> <p>Anywhere sediment is tracked from the project site onto public or private paved roads, typically at points of ingress and egress.</p>

