including Guest house, plantation area is carried by this drain at location OP4 (near township security gate). However, this drain may not function effectively in future or may not exist in future due to expansion plan of railways.

Mundabasti nala in North: Storm runoff from Mundabasti and Bantul village area (mainly agricultural land) enters the plant area through a culvert (Samal branch canal) on north west boundary at location I1 (Photos 6.8 & 6.9). This storm runoff as well as runoff from site of proposed raw water, existing CHP area drains in the Mundabasti nala passing through railway culverts near watch tower (Photos 6.10 & 6.11). There are two culverts; one on railway siding and another on the main Talcher branch of East Coast railway line; each has three spans. One span is being used for water supply pipe lines (Photo 6.12).

Photo 6.8 Mundabasti nala under canal culvert entering north west part of plant at Inlet I1

Photo 6.9 Downstream view of Mundabasti nala at entry I1

Photo 6.10. Mundabasti drain between plant boundary and railway track

Photo 6.11. Mundabasti drain between plant boundary and railway track

Photo 6.12. Railway culvert over Mundabasti nala. One span carries water supply pipe line

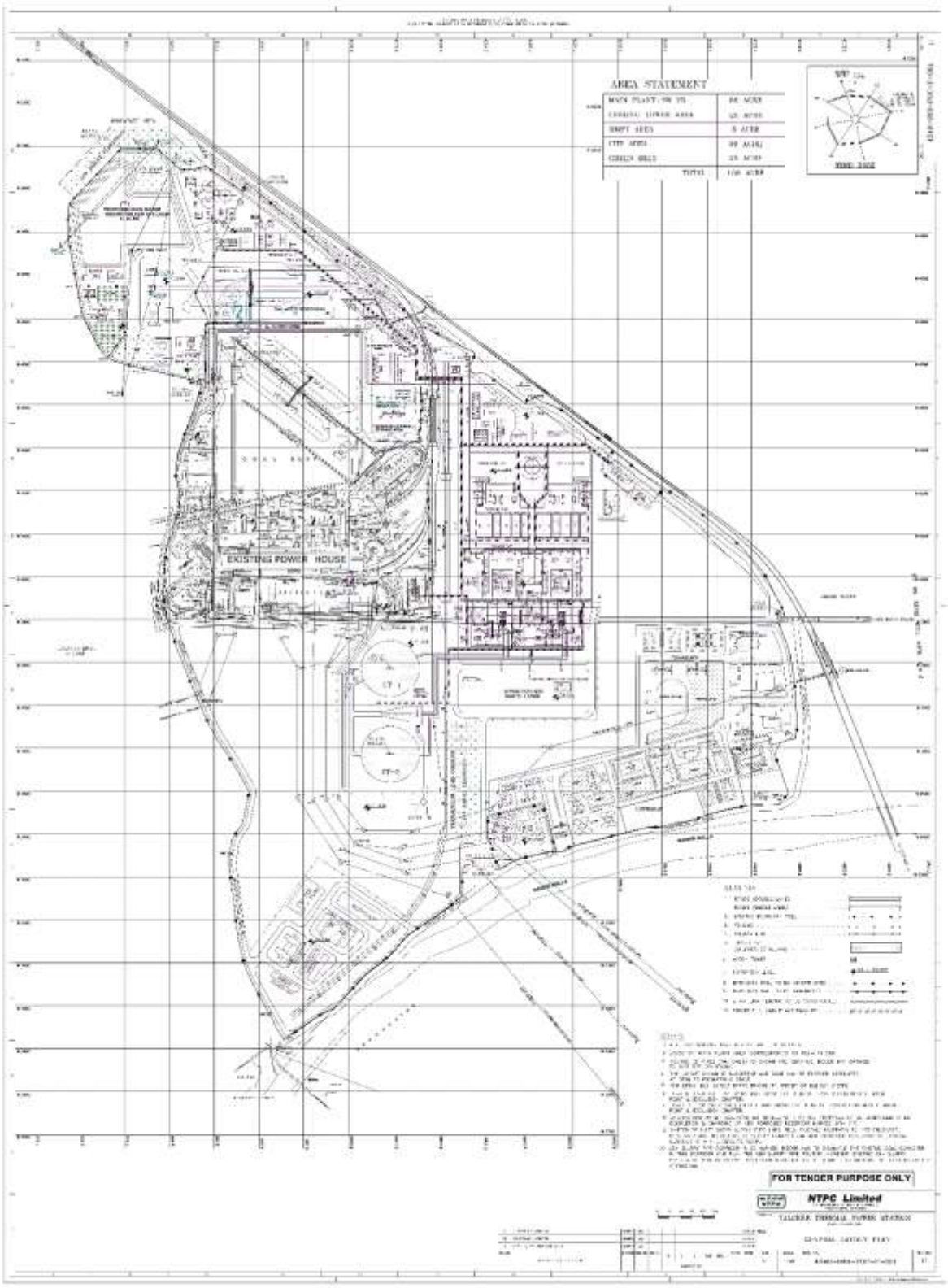


Figure 6.1a: Various facilities (components) in the TTPP stage III and existing plant

6.2.3 Partition of Project Area into Drainage Zones

Partitioning of area and provision of separate outfalls for different zones helps in reducing size of drains and hence cost of land. Outfalls are proposed on Nandira nala and Mundabasti nala for drainage of plant area and for runoff from Jagannathpur and Mundabasti area. Figure 6.2 show the partition of project area into six zones and the proposed outfalls. Table 6.2 shows runoff contributing area (project facilities) and outfall locations for each zone and for the trunk drains.

Table 6.2: Partition of Project Area into Drainage Zones

Zone	Project Facilities	Outfall Location	Natural Drain
TRUNK DRAINS			
Western Trunk Drain for Jagannathpur runoff	It carries storm runoff from Jagannathpur starting at I3 (inlet for runoff)	OP1	Nandira nala
Western Trunk Drain for Mundabasti runoff	To carry storm runoff from Mundabasti and Bantul village area which enters the plant area through a canal culvert at location I1	OP1A	Nandira nala
Alternate Trunk Drain for runoff from Jagannathpur	It carries storm runoff from Jagannathpur village (entering plant area at I3) to outfall on Mundabasti drain.	OP8 at rail culvert	Mundabasti drain
Alternate Trunk Drain for Mundabasti runoff	To carry storm runoff from Mundabasti and Bantul village area which enters the plant area through a canal culvert at location I1	OP6 at rail culvert	Mundabasti drain
ZONES			
W	Site of construction office, construction store, O&M office and vacant land between trunk drain and CTs, APs	OP2 Near ETP	Nandira nala
X	Stage III switch yard, main plant area, CTs, transmission line corridor and vacant land, Fire water HP, Ash silos, ash utility building	OP3 near ETP	Nandira nala
Y	Existing guest house, plantation area and vacant land(temporary sector of township)	TP2	Nandira nala
Z	CISF barracks, play area, OSP, FPH, Green belt , raw water reservoir , CHP area, lime storage area, Gypsum dewatering area. temporary gypsum storage area	OP5,OP7 at rail culvert	Mundabasti nala
A	vacant land between switch yard and township , administration office and residences	TP1	Nandira nala
B	township area	TP2	Nandira nala

See also figure 6.2.

Trunk Drain for Disposal of Jaganathpur Runoff: Jagannathpur village lies adjacent to the boundary and it does not have its own drainage system. A trunk drain along western boundary starting from location I3 and upto outfall at OP1 on Nandira nala is proposed (photo 6.13). A 600 m long drain (rectangular, concrete) along and inside western boundary already exists. This trunk drain shall be extended upstream and shall cater exclusively to the storm water from outside NTPC premises (i.e. Jagannathpur village area).

However, there is constraint on availability of land along western boundary in existing plant area of stage I and II. Therefore, as an alternative, a trunk drain passing through zone Z and with outfall OP8 on Mundabasti nala is also considered for drainage of runoff from Jagannathpur area till the time stage I& II remain in operation.

Trunk Drain for Disposal of Mundabasti Runoff: For drainage of runoff from Mundabasti area, a trunk drain along western boundary (parallel to the Jagannathpur trunk drain) with outfall OP1A on Nandira nala is proposed. As an alternative, a trunk drain with outfall OP6 on Mundabasti nala is also considered till the time stage I& II remain in operation.

Photo 6.13 Outfall of western trunk drain (OP1) in Nandira nala

W Zone: includes i) vacant land between western trunk drain and Stage III CTs, and ii) site of construction office, construction store, O&M Office. The storm runoff shall be carried to outfall

OP2 on Nandira nala through a planned network of drains. An ETP exists near OP2. Therefore, part of the storm runoff from W zone could be treated in the ETP and reused as per requirement.

X Zone: It includes proposed sites for switch yard, main plant area, cooling towers, transmission line corridor and vacant land (ash pipes). The storm runoff shall be carried by planned network of drains to outfall OP3 on Nandira nala. Location of outfall OP3 is proposed to be near the existing ETP. Part of the storm runoff from X zone can be treated in the ETP and reused.

Y Zone (Temporary Sector of Township): It includes guest house and plantation area and vacant land. The east side small drain (tributary of Nandira nala) is running parallel & adjacent to the existing railway track. Railways are in the process of expanding the P-way herby introducing 1 track each on the sides of existing track No. 1 & 2. During this expansion, the east side small drain may not be a well-established drain as it is now or may be closed permanently. In view of the above, it is proposed to carry the runoff from Zone-Y through zone B (as part of zone B drain network) with outfall TP2 on Nandira nala.

Z Zone: It includes temporary gypsum storage area, Fire water PH, Ash silos, Utility building lime storage area, Gypsum dewatering area, raw water reservoir for stage I, II, III, CHP area, CISF area. The storm runoff shall be carried by planned network of drains to outfall OP5 on Nandira nala Part of runoff from existing plant area shall also be carried to OP5.

Township Zones

A Zone: It includes vacant land between switch yard and township, administration office and residences. Network of drains shall carry storm runoff to Outfall TP1 on Nandira nala.

B Zone: It covers the township area. Network of drains shall carry runoff from zone B and also from zone Y to outfall TP2 on Nandira nala.

Green belt is proposed in north of raw water reservoir for stage I, II and III (in the form low height plantation) and near CISF barracks. Rainwater in the green belt will contribute to recharge of ground water. However adequate drainage is considered to avoid waterlogging.

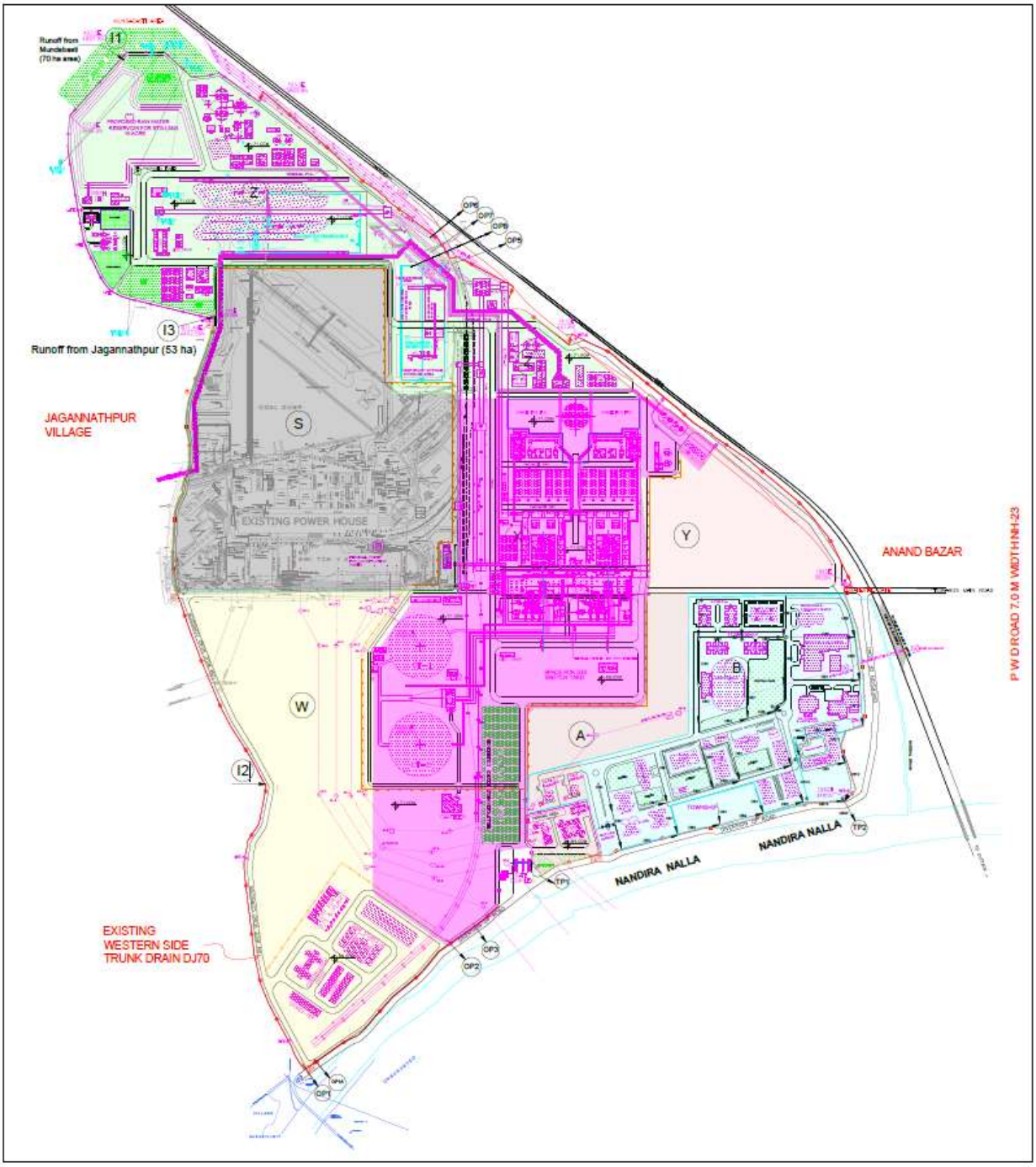


Figure 6.2. Partition of plant area into Zones and Nandira nala.

6.3 DESIGN DISCHARGE

6.3.1 Design Considerations

The drainage layout has been planned based on following considerations:

(i) Return period of 50 years has been considered in drainage design.

(ii) Bed slope of drains is kept such that flow is carried with sufficient velocity so that silting does not occur in channels and also so that channel invert levels are not in deep cutting.

(iii) Concrete channels of rectangular shape are proposed for internal drainage and trunk drains.

(iv) Width of drains shall not be less than 0.75 m as per standard practice adopted by NTPC.

(v) Vertical falls shall be provided to negotiate difference if any in formation levels of various components and at the outfall locations.

(vi) Channel slope, length, bed width is worked out such that capacity utilization in each of the channel segment (ratio of discharge contributed by connecting sub-catchments to the channel carrying capacity) is near to 1.0. However, in few channel segments this requirement may have to be compromised based on hydraulic and drainage layout considerations.

6.3.2 Design Discharge for Internal Drainage

The topography of project site is plain. The land use and topography in the project area will get modified during post project condition. However, the net effect of changes in land use, land cover and topography in post project condition shall be negligible. Part of the plant and township area such as road, main plant area, township area etc. will become less pervious. This will cause more storm runoff. On the other hand, infiltration in the open land and green belt area shall increase and hence, storm runoff shall reduce. The flood generated by storm rainfall is expected to be same as for pre project condition.

The procedure for estimation of design flood has been explained in Chapter 5. Internal drains in various zones and the trunk drains are designed considering specific discharge of 0.1616 cumec/ha (corresponding to 50 year return period).

6.4 CARRYING CAPACITY AND DESIGN OF CHANNEL SECTIONS

6.4.1 Channel Sections

Manning's roughness coefficient(n) is taken as 0.016 for concrete channel.

Bed slope: Bed slope of 1:1000 and 1:1500 have been considered for internal drainage channels However, the end channels connecting to outfall in each zone can be laid at steeper slope as sufficient natural gradient is available. For example, the existing west side trunk drain has a slope of 3.8 m per 1000 m (s=0.0038).

Depth of flow in a channel section: a resistance formula proposed by Robert Manning for uniform flow in open channel is used.

$$V(m/s) = \frac{1}{n} \times R^{2/3} \times S^{1/2};\ R = A/P$$

Q=A×V

where:

- V is the velocity (m/s),
- S is the slope of channel = h_L/L
- R is hydraulic mean depth (=A/P)
- A is cross section area (m^2)
- P is perimeter (m) and,
- n is Manning's roughness coefficient (=0.016 for concrete lined channel).
- Q is the discharge (m^3/sec)

For rectangular section

A= B×D

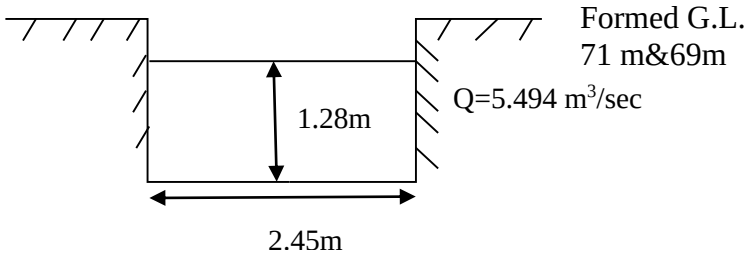
P=B+2D

R=A/P=(B×D)/(B+2D)

and section factor $\frac{Q_n}{\sqrt{S}} = AR^{2/3} = \frac{(B \times D)^{5/3}}{(B+2D)^{2/3}}$

For given Q, n, and s, the width and depth of the channel are adjusted so that above equation is satisfied. Depth of flow is constrained by the invert level of outfall and the FGL of the contributing catchment area. To carry maximum flow through a given cross section area, depth of flow (D) should be near about half of the width (B) of section.

A typical section of the lined rectangular channel (DW34 ie end channel of zone W) is shown below (see table 6.3).This channel is laid at slope of 1:1500.



6.4.2 Carrying Capacity of Channel Segments

It is not necessary that a long drain should have same discharge carrying capacity over its length to carry the discharge generated from its catchment. In order to economize the cost and area occupied by drains, a suitable number of channel segments may be considered. A unit length of approximately 100m has been considered for a channel segment and its own contributing catchment is taken to be about 1 hectare (100m × 100m). Discharge contributed by catchment of a channel segment is added to the capacity of its upstream channel segment (s) to estimate carrying capacity of the particular channel segment. Drainage map of entire area is presented in Figure 6.3. Figures 6.4 to 6.9 show the layout of drains in different zones. Size of different channel segments in zone W, X, Y, Z, A and B are stated in tables 6.3 to 6.8 respectively.

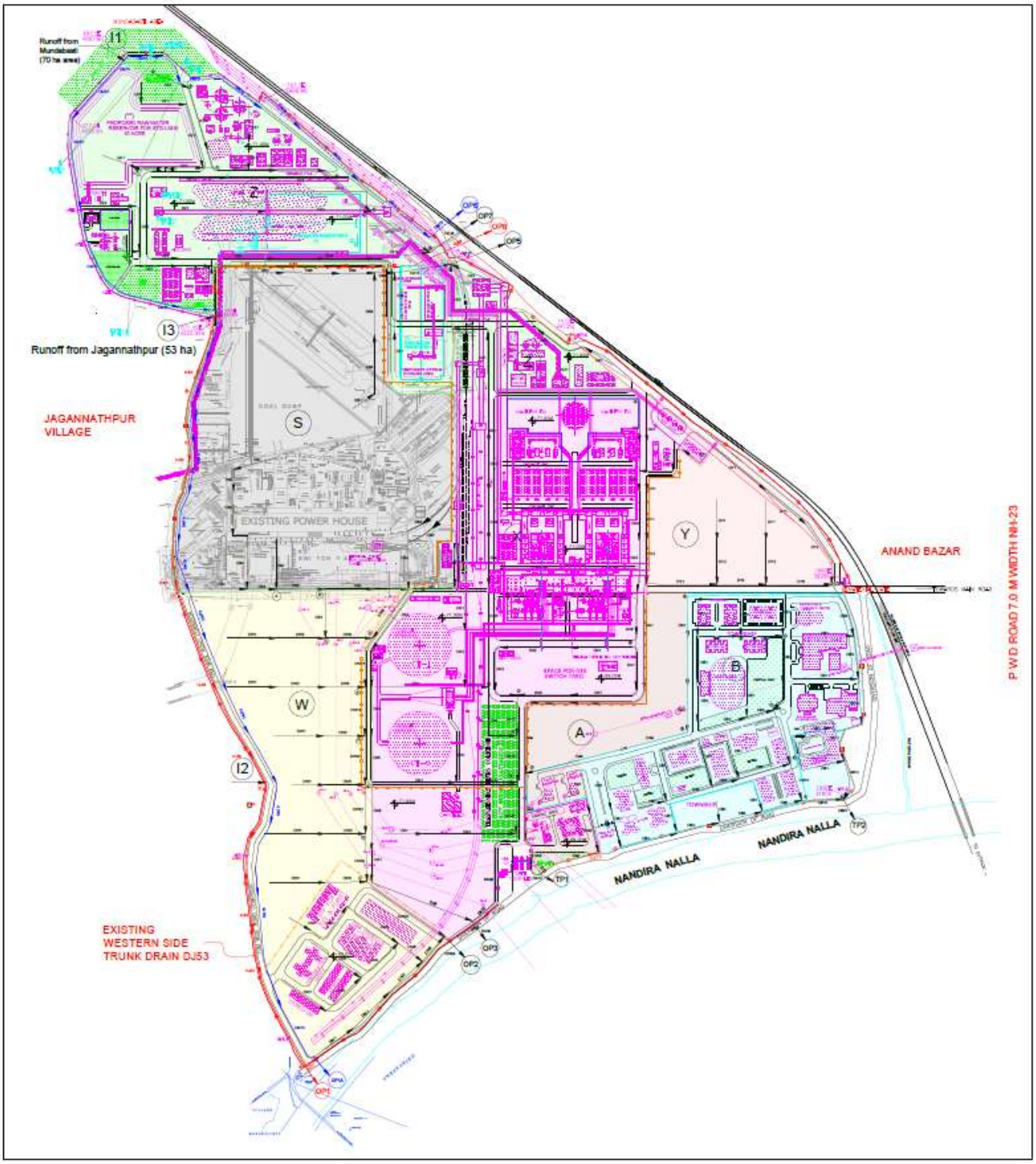


Figure 6.3 Drainage map for entire area

Table 6.3: Design of Channel Sections in W zone

Channel name	Catchment Area (ha)	Carrying Capacity (cumec)	Manning (n)	Slope(s) 1:1000	Section factor $(Qn/(S)^{1/2})$	Bed Width(B) (m)	Depth(D) (m)
DS1	1	0.162	0.016	0.001	0.082	0.75	0.35
DS2	2	0.323	0.016	0.001	0.164	1.00	0.43
DS3	3	0.485	0.016	0.001	0.245	1.15	0.50
DS4	4	0.646	0.016	0.001	0.327	1.20	0.60
DS5	5	0.808	0.016	0.001	0.409	1.30	0.65
DS6	6	0.970	0.016	0.001	0.491	1.35	0.70
DW1	1	0.162	0.016	0.001	0.082	0.75	0.35
DW2	2	0.323	0.016	0.001	0.164	1.00	0.43
DW3	3	0.485	0.016	0.001	0.245	1.15	0.50
DW4	4	0.646	0.016	0.001	0.327	1.20	0.60
DW5	5	0.808	0.016	0.001	0.409	1.30	0.65
DW6	6	0.970	0.016	0.001	0.491	1.35	0.70
DW7	7	1.131	0.016	0.001	0.572	1.50	0.74
DW8	8	1.293	0.016	0.001	0.654	1.53	0.79
DW9	9	1.454	0.016	0.001	0.736	1.60	0.83
DW10	10	1.616	0.016	0.001	0.818	1.66	0.87
DW15	15	2.424	0.016	0.0015	1.001	1.9	0.89
DW18	18	2.909	0.016	0.0015	1.202	2.05	0.95
DW20	20	3.232	0.016	0.0015	1.335	2.05	1.03
DW22	22	3.555	0.016	0.0015	1.469	2.05	1.1
DW24	24	3.878	0.016	0.0015	1.602	2.15	1.12
DW26	26	4.202	0.016	0.0015	1.736	2.2	1.15
DW34	34	5.494	0.016	0.0015	2.27	2.45	1.28

Table 6.4: Design of Channel Sections in X zone

Channel name	Catchment Area(ha)	Carrying Capacity (cumec)	Manning (n)	Slope(s) 1:1000	Section factor $(Qn/(S)^{1/2})$	Bed Width(B) (m)	Depth(D) (m)
DX1	1	0.162	0.016	0.001	0.082	0.75	0.35
DX2	2	0.323	0.016	0.001	0.164	1.00	0.43
DX3	3	0.485	0.016	0.001	0.245	1.15	0.50
DX4	4	0.646	0.016	0.001	0.327	1.20	0.60
DW5	5	0.808	0.016	0.001	0.409	1.30	0.65
DX6	6	0.970	0.016	0.001	0.491	1.35	0.70

DX7	7	1.131	0.016	0.001	0.572	1.50	0.74
DX8	8	1.293	0.016	0.001	0.654	1.53	0.79
DX9	9	1.454	0.016	0.001	0.736	1.60	0.83
DX10	10	1.616	0.016	0.001	0.818	1.66	0.87
DX15	15	2.424	0.016	0.0015	1.001	1.90	0.89
DX18	18	2.909	0.016	0.0015	1.202	2.05	0.95
DX20	20	3.232	0.016	0.0015	1.335	2.05	1.03
DX22	22	3.555	0.016	0.0015	1.469	2.05	1.10
DX30	30	4.848	0.016	0.0015	2.003	2.35	1.2

Table 6.5: Design of Channel Sections in Y zone

Channel name	**Catchment Area(ha)**	**Carrying Capacity (cumec)**	**Manning (n)**	**Slope(s) 1:1000**	**Section factor $(Qn/(S)^{1/2})$**	**Bed Width(B) (m)**	**Depth(D) (m)**
DY1	1	0.162	0.016	0.001	0.082	0.75	0.35
DY2	2	0.323	0.016	0.001	0.164	1.00	0.43
DY4	4	0.646	0.016	0.001	0.327	1.20	0.60
DY6	6	0.970	0.016	0.001	0.491	1.35	0.70
Note: storm runoff is taken to outfall TP2 through township zone B							

Table 6.6: Design of Channel Sections in Z zone

Channel name	**Catchment Area(ha)**	**Carrying Capacity (cumec)**	**Manning (n)**	**Slope(s) 1:1000**	**Section factor $(Qn/(S)^{1/2})$**	**Bed Width(B) (m)**	**Depth(D) (m)**
DS1	1	0.162	0.016	0.001	0.082	0.75	0.35
DS2	2	0.323	0.016	0.001	0.164	1.00	0.43
DS3	3	0.485	0.016	0.001	0.245	1.15	0.50
DS4	4	0.646	0.016	0.001	0.327	1.20	0.60
DS8	8	1.293	0.016	0.001	0.654	1.53	0.79
DZ1	1	0.162	0.016	0.001	0.082	0.75	0.35
DZ2	2	0.323	0.016	0.001	0.164	1.00	0.43
DZ3	3	0.485	0.016	0.001	0.245	1.15	0.50
DZ4	4	0.646	0.016	0.001	0.327	1.20	0.60
DZ5	5	0.808	0.016	0.001	0.409	1.30	0.65
DZ6	6	0.970	0.016	0.001	0.491	1.35	0.70
DZ7	7	1.131	0.016	0.001	0.572	1.50	0.74
DZ8	8	1.293	0.016	0.001	0.654	1.53	0.79
DZ9	9	1.454	0.016	0.001	0.736	1.60	0.83
DZ10	10	1.616	0.016	0.001	0.818	1.66	0.87

DZ11	11	1.778	0.016	0.001	0.899	1.75	0.87
DZ13	13	2.101	0.016	0.001	1.063	1.85	0.95
DZ15	15	2.425	0.016	0.0015	1.001	1.9	0.89
DZ23	23	3.717	0.016	0.0015	1.535	2.15	1.1

Table 6.7: Design of Channel Sections in A zone

Channel name	**Catchment Area(ha)**	**Carrying Capacity (cumec)**	**Manning (n)**	**Slope(s) 1:1000**	**Section factor $(Qn/(S)^{1/2})$**	**Bed Width(B) (m)**	**Depth(D) (m)**
DA1	1	0.162	0.016	0.001	0.082	0.75	0.35
DA2	2	0.323	0.016	0.001	0.164	1.00	0.43
DA3	3	0.485	0.016	0.001	0.245	1.15	0.50
DA4	4	0.646	0.016	0.001	0.327	1.20	0.60
DA8	8	1.293	0.016	0.001	0.654	1.53	0.79
DA9	9	1.454	0.016	0.001	0.736	1.60	0.83
DA12	12	1.939	0.016	0.001	0.981	1.8	0.9

Table 6.8: Design of Channel Sections in B zone

Channel name	**Catchment Area(ha)**	**Carrying Capacity (cumec)**	**Manning (n)**	**Slope(s) 1:1000**	**Section factor $(Qn/(S)^{1/2})$**	**Bed Width(B) (m)**	**Depth(D) (m)**
DB1	1	0.162	0.016	0.001	0.082	0.75	0.35
DB2	2	0.323	0.016	0.001	0.164	1.00	0.43
DB3	3	0.485	0.016	0.001	0.245	1.15	0.50
DB4	4	0.646	0.016	0.001	0.327	1.20	0.60
DB5	5	0.808	0.016	0.001	0.409	1.30	0.65
DB6	6	0.970	0.016	0.001	0.491	1.35	0.70
DB7	7	1.131	0.016	0.001	0.572	1.50	0.74
DB8	8	1.293	0.016	0.001	0.654	1.53	0.79
DB9	9	1.454	0.016	0.001	0.736	1.60	0.83
DB10	10	1.616	0.016	0.001	0.818	1.66	0.87
DB11	11	1.778	0.016	0.001	0.899	1.75	0.87
DB12	12	1.939	0.016	0.001	0.981	1.8	0.9
DB15	15	2.424	0.016	0.0015	1.001	1.9	0.89
DB27	27	4.363	0.016	0.0015	1.803	2.3	1.15

6.5 INVERT LEVEL OF CHANNELS LYING ON LONGEST FLOW PATH

Longest flow path is the path followed by gravity flow from farthest point of drain to outfall. Invert levels of channel segments lying on the longest path will help to lay the main drain on desired slope and to adjust layout of the lateral channels at junctions. Lateral channels at junction point with the main drain (on longest path) shall have invert level of end node equal to or higher than the invert level of end node of the channel segment on main drain. Longest flow path in the six zones are shown in figures 6.4 to 6.9. Tables 6.9 to 6.13 show the computation of invert levels in different channel segments.

Nandira nala flows along the southern boundary of the plant area. Invert level of the end channel connecting to outfall on Nandira nala should be below road level and above HFL in nala. Topography(contour) map shows that elevation of the road along southern boundary of plant and township is above 65.5 m amsl. Nala left bank has elevation around 63.5 m amsl. High flood level in Nandira nala is therefore about 63.5 m amsl.

Table 6 .9: Invert Levels of Channels along Longest Flow Path (Main Drain) in W Zone

Channel Segment (ref Figure 6.4)	Channel name	Length (m)	Slope	Drop in bed level (m)	Invert Level(m)		FGL of surrounding area (m)	Depth of flow in Channel (m)	FSL of flow in channel (m)
					Initial node	End node			
A1-A	Szone	400	0,001	0.4	70.5	70.1	71	0.65	70.75
A-B	DS6	100	0.001	0.1	70.1	70.0	71	0.7	70.70
B-C	DW7	100	0.001	0.1	70.0	69.9	71	0.74	70.64
C-D	DW9	100	0.001	0.1	69.9	69.8	71	0.83	70.63
D-E	DW15	100	0.0015	0.15	69.8	69.65	71	0.89	70.54
E-F	DW18	100	0.0015	0.15	69.65	69.5	71	0.95	70.45
F-G	DW20	100	0.0015	0.15	69.5	69.35	71	1.03	70.38
G-H	DW22	100	0.001	0.15	69.35	69.2	71	1.1	70.3
H-I	DW24	100	0.001	0.15	**69.2**	69.05	71	1.12	70.17
Drop of 2m									
I-J	DW26	200	0.0015	0.3	67.05	66.75	69	1.15	67.9
J-OP2	DW34	50	0.0015	0.075	66.75	66.67	Sloping land	1.28	67.95

Table 6.10: Invert Level of Channels along Longest Flow Path (Main Drain) in X Zone

Channel Segment (ref Figure 6.5)	Channel name	Length(m)	Slope	Drop in bed level (m)	Invert Level(m)		FGL of surrounding area(m)	Depth of flow in Channel (m)	FSL of flow in channel (m)
					Initial node	End node			
A-B	DX6	500	0.001	0.5	70.35	69.85	71	0.7	70.55
Drop of 2 m(Switch yard FGL is 69 m)									
B-C	DX8	350	0.001	0.35	67.85	67.50	69	0.79	68.29
C-D	DX10	120	0.001	0.12	67.5	67.38	69	0.87	68.25
Drop of 1 m at D									
D-E	DX18	100	0.0015	0.15	**66.38**	66.23	69	0.95	67.18
E-F	DX20	100	0.0015	0.15	66.23	66.08	69	1.03	67.11
F-G	DX22	140	0.0015	0.21	66.08	65.87	69	1.1	66.97
G-OP3	DX30	50	0.0015	0.075	65.87	65.79	Sloping land	1.2	66.99

Table 6.11: Invert Level of Channels along Longest Flow Path (Main Drain) in Z Zone

Channel Segment (ref Figure 6.7)	Channel name	Length (m)	Slope	Drop in bed level (m)	Invert Level (m)		FGL of surrounding area (m)	Depth of flow in Channel (m)	FSL of flow in channel (m)
					Initial node	End node			
A-B	DZ2	100	0.001	0.1	70.5	70.4	71	0.35	70.75
B-C	DZ3	175	0.001	0.175	70.4	70.22	71	0.5	70.72
Drop 0.52 m									
C-D	DZ7	75	0.001	0.075	69.7	69.62	71	0.74	70.36
D-E	DZ9	185	0.001	0.185	**69.62**	69.43	71	0.75	70.18
E-F	DZ11	120	0.001	0.12	69.43	69.31	71	0.8	70.11
F-G	DZ13	130	0.001	0.13	69.31	69.18	71	0.85	70.03
Drop 0.5 m									
G-OP7	DZ23	30	0.0015	0.045	68.68	68.63	71	1.1	69.73

Table 6.12: Invert Level of Channels along Longest Flow Path (Main Drain) in A Zone

Channel Segment (ref Figure 6.8)	Channel name	Length (m)	Slope	Drop in bed level(m)	Invert Level(m)		FGL of surrounding area(m)	Depth of flow in Channel (m)	FSL of flow in channel (m)
					Initial node	End node			
A-B	DA2	300	0.001	0.3	68.5	68.2	69	0.43	68.63
B-C	DA4	350	0.001	0.35	68.2	67.85	69	0.6	68.45
C-D	DA9	200	0.001	0.2	67.85	67.65	69	0.83	68.48

Ground level in zone A is assumed to be 69.0m.

Table 6.13: Invert Level of Channels along Longest Flow Path (Main Drain) in B Zone

Channel Segment (ref Figure 6.9)	Channel name	Length (m)	Slope	Drop in bed level(m)	Invert Level(m)		FGL of surrounding area(m)	Depth of flow in Channel (m)	FSL of flow in channel (m)
					Initial node	End node			
A-B	DB1	200	0.001	0.2	68.5	68.3	69.0	0.35	68.65
B-C	DB2	100	0.001	0.1	68. 3	68.2	69.0	0.43	68.63
C-D	DB3	150	0.001	0.15	68.2	68.05	69	0.5	68.55
Drop 1m at D									
D-E	DB6	150	0.001	0.15	67.05	66.9	69	0.7	67.6
E-F	DB11	100	0.001	0.1	66.9	66.8	69	0.87	67.67
F-G	DB15	80	0.0015	0.12	66.8	66.68	69	0.89	67.57

Note: Ground level in zone B is assumed to be 69.0m.

6.6 VERTICAL FALLS

Invert levels of channel segments on longest path in each zone have been worked out in previous section. Vertical drop in invert level have been provided at suitable locations as shown in the tables. Well type fall (also called cylinder fall) is suitable and economical for large height fall and small discharge. The water is dropped into a well over a crest from where it emerges near the bottom dissipating its energy in turbulence inside the well. For low height fall and large discharge, crest weir over full width of channel is suitable. Location and size of vertical falls in all zones is given in Table 6.14.

Table 6.14 Location and Size of Vertical Falls in all Zones

Zone	**Channel**	**Location in figure**	**Drop Height (m)**	**Discharge (cumec)**	**Fall type**	**Width(m)**
W	HI	I	2	3.878	crest weir	2.15
X	AB	B	2	0.97	Crest weir	1.35
	CD	D	1	1.616	Crest weir	1.66
Z	BC	C	0.52	0.485	drop	1.15
	FG	G	0.5	2.101	drop	1.85
B	CD	D	1	0.485	Well type	1.15

Lateral channels at junction point with the main drain (on longest path) have invert level of end node equal to or higher than the invert level of end node of the channel segment on main drain. The channels are designed with longitudinal slope as 1:1000 and 1:1500. Since level difference is small less than 1 m, there is no need for vertical falls for lateral channels.

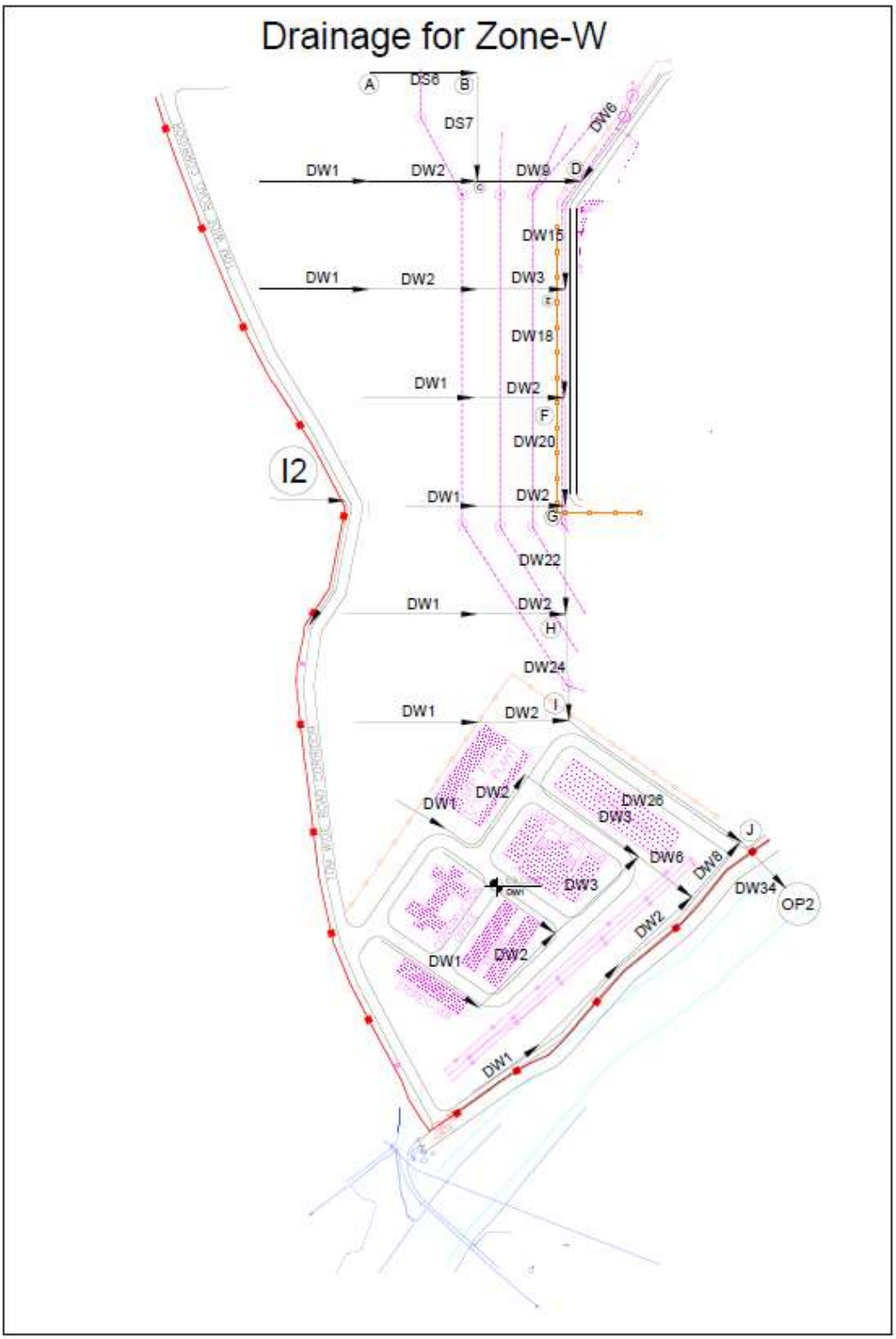


Figure 6.4 W Zone drainage plan showing drains, longest flow path and outfall location

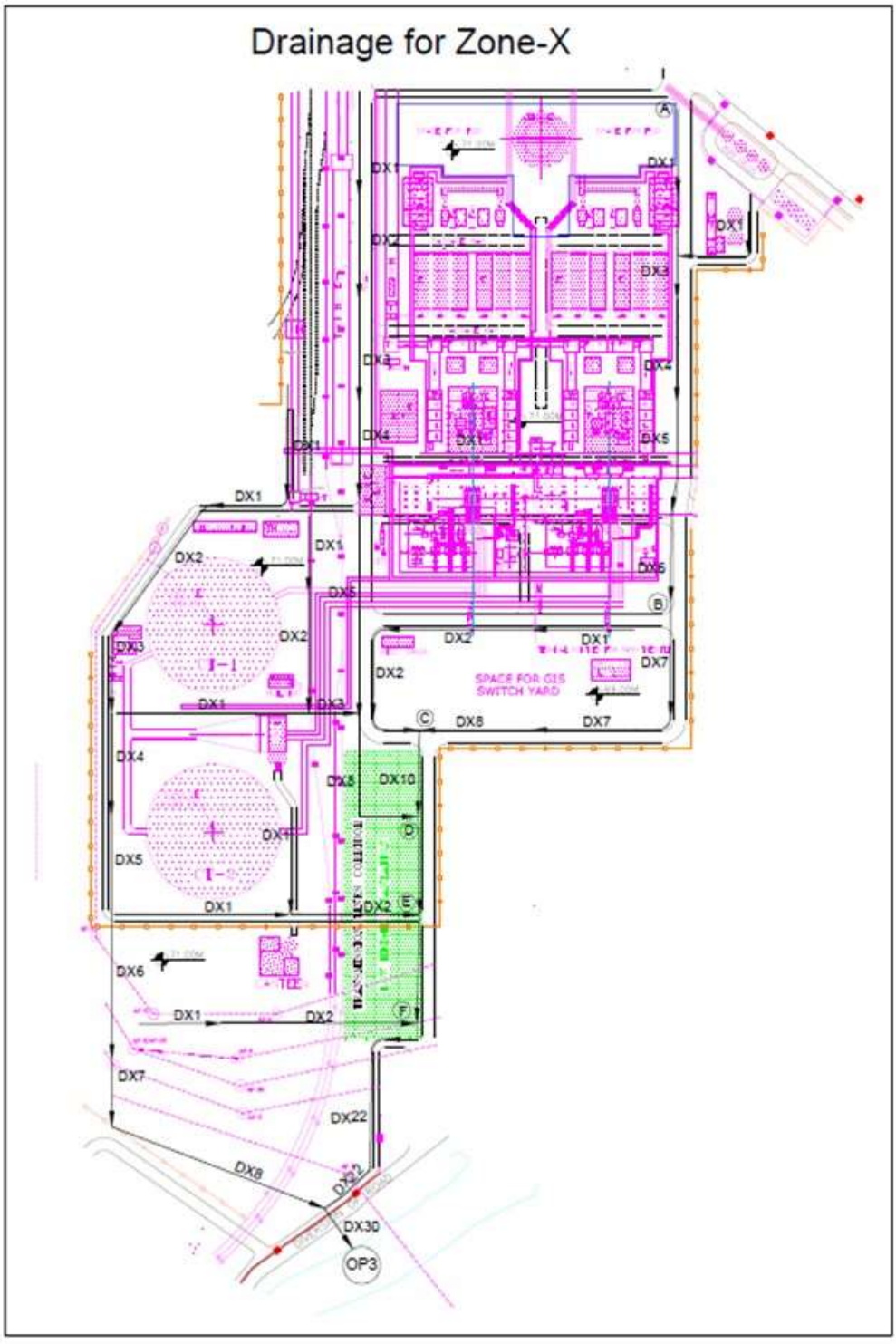


Figure 6.5 X Zone drainage plan showing drains, longest flow path and outfall location

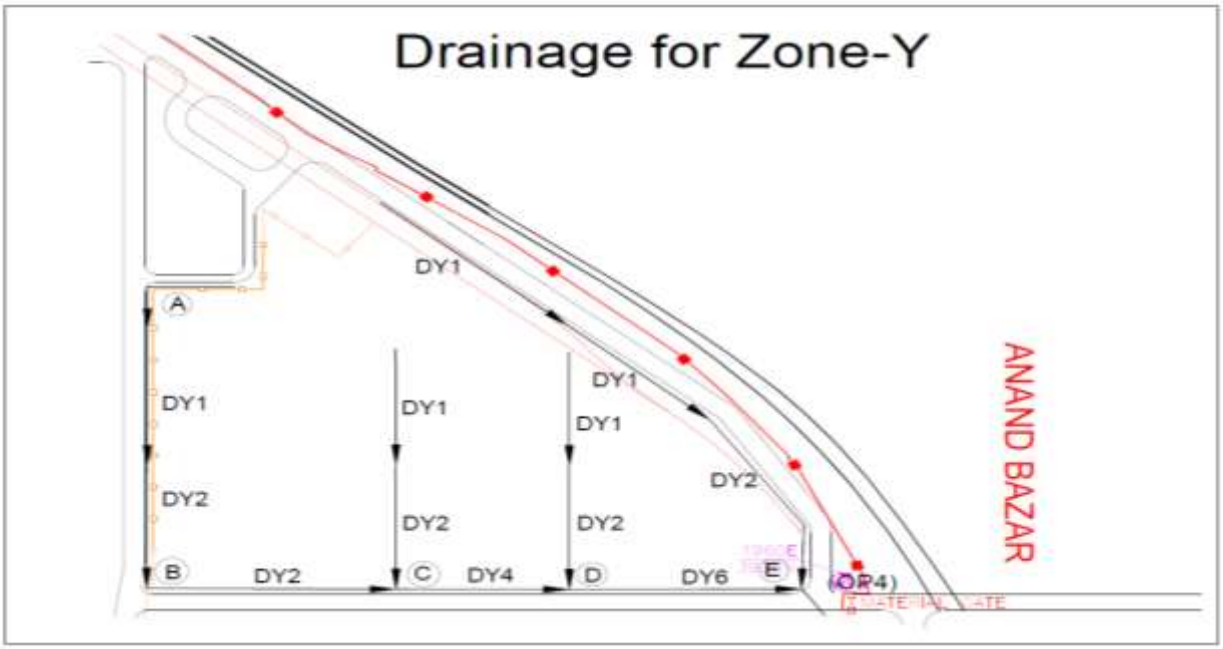


Figure 6.6 Y Zone drainage plan showing drains, longest flow path and outfall location

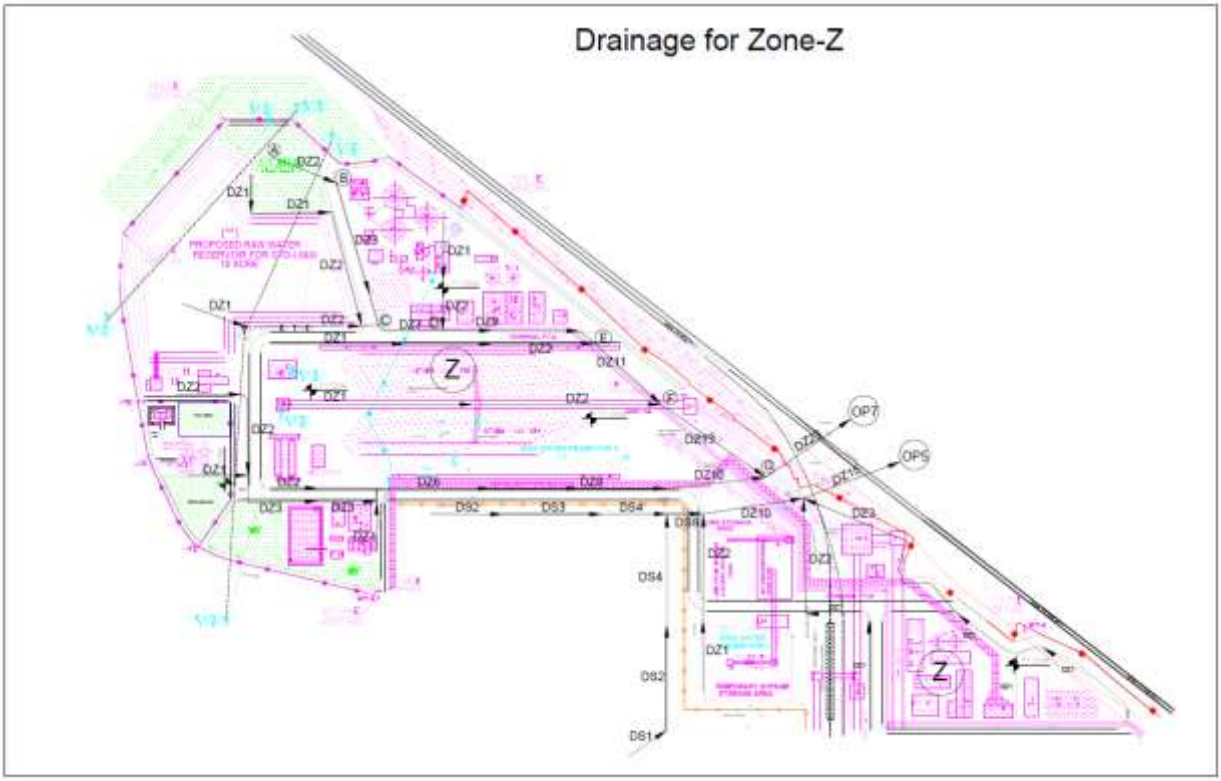


Figure 6.7 Z Zone drainage plan showing drains, longest flow path and outfall location

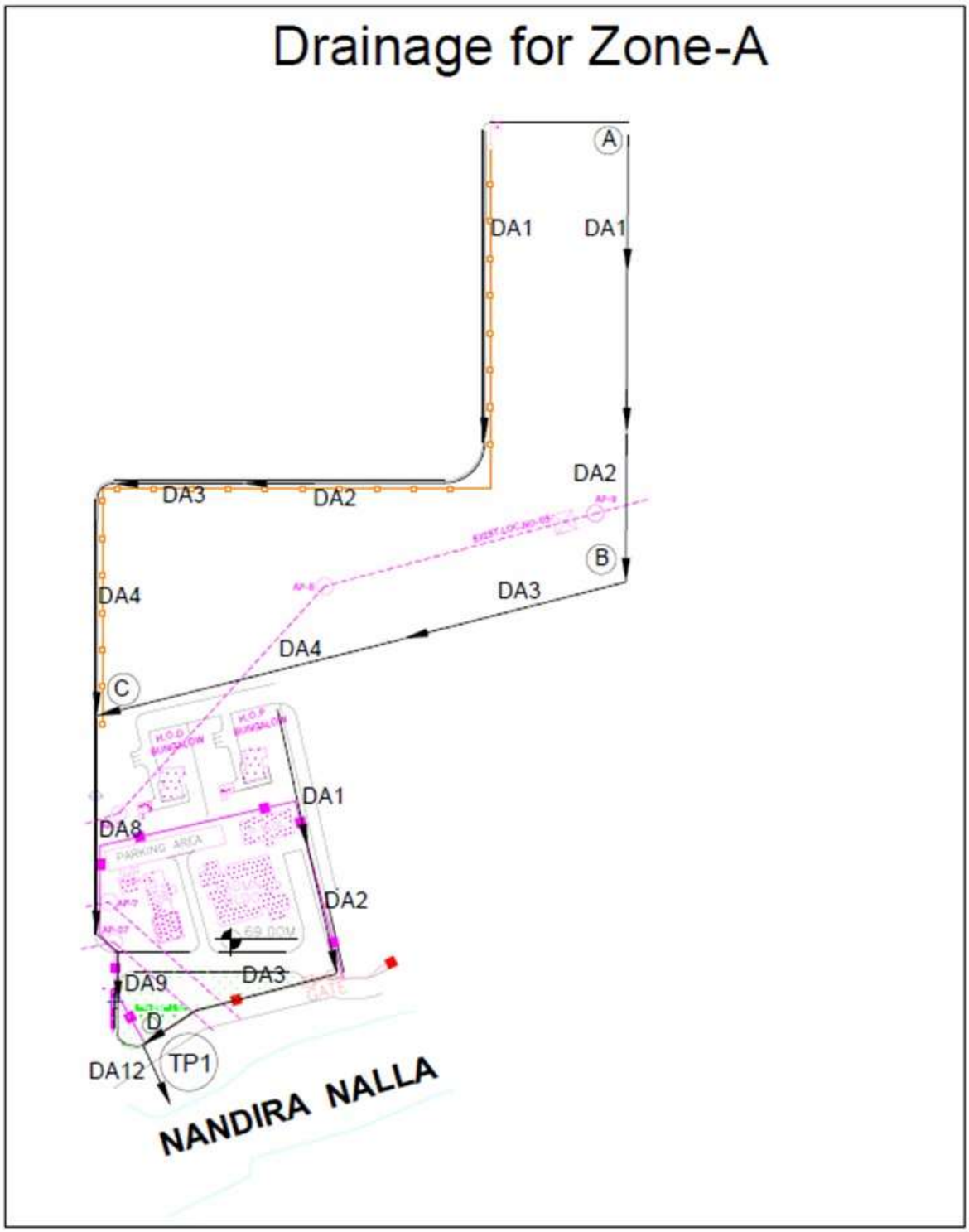


Figure 6.8 A Zone drainage plan showing drains, longest flow path and outfall location

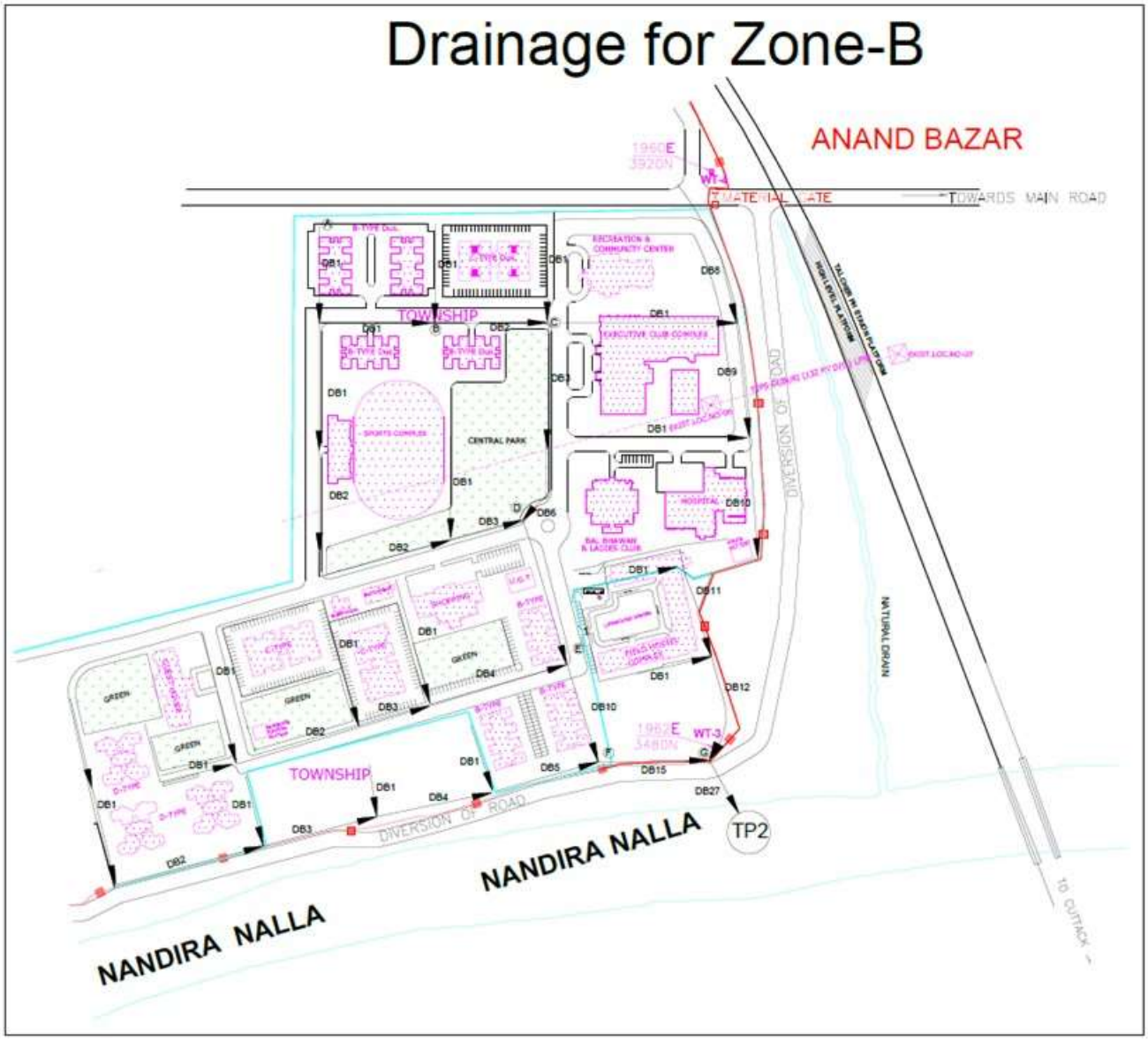


Figure 6.9 B Zone drainage plan showing drains, longest flow path and outfall location

6.7 DESIGN OF WEST SIDE TRUNK DRAIN TO CARRY JAGANNATHPUR RUNOFF

A rectangular concrete drain is already constructed over a length of 600 m from point I2 to OP1. Salient feature of the constructed portion are:

Length is 600 m. Invert level at inlet I2 is 67.64m: invert level at outfall OP1 is 65.38 m. Level difference is 2.26m. slope=2.26/600=0.0038. Manning's roughness coefficient n is taken as 0.02 (concrete drain under normal maintenance) and width is 2.25 m. With 1.6 m depth of flow it can carry a discharge of 8.46 cumec. As discussed above, specific design discharge is 0.1616 cumec/ha. Thus, the trunk drain has capacity to carry storm water from 53ha (8.46 cumec/0.1616 cumec/ha= 52.35 ha say 53 ha) drainage area. It is to be noted that only part of the Jagannathpur village area contributes runoff to the trunk drain. Therefore, the existing drain size is adequate. It will be extended upto location I3 along the existing plant boundary where most of the Jagannathpur runoff enters the trunk drain. The extended portion of this drain shall have same slope as for the existing drain i.e. 0.0038(3.8m per km) (figure 6.10). Table 6.15 shows the longitudinal slope and size of the trunk drain.

Table 6.15: Slope and Channel Section of the Trunk Drain to carry Jagannathpur runoff

Channel name	Catchment Area (ha)	Carrying Capacity (cumec)	Manning (n)	Slope(s)	Section factor $(Qn/(S)^{1/2})$	Bed Width (B) (m)	Depth (D)(m)
DJ53	52.35	8.46	0.02	0.0038	2.745	2.25	1.6

Alternate Arrangement for Disposal of Runoff from Jagannathpur: As discussed earlier, there is constraint on availability of land along western boundary in existing plant area of stage I and II. Therefore, as an alternative, a trunk drain passing through Z zone and with outfall OP8 on Mundabasti nala is also considered for drainage of runoff from Jagannathpur area. The channel section shall be same as given in table 6.15. Layout of this trunk drain is shown in figure 6.11

6.8 DESIGN OF WEST SIDE TRUNK DRAIN TO CARRY MUNDABASTI RUNOFF

A trunk drain on western boundary is proposed for drainage of storm water from Mundabasti area (figure 6.10). However, this drain on western boundary is possible only when the land becomes available along western boundary in Stage I & II area (i.e. after dismantling of stage I and II facilities).

The runoff contributing area of Mundabasti is 70 ha. Required carrying capacity of channel is 0.1616 × 70=11.312 cumec. This discharge is carried by a rectangular trunk drain along western boundary to outfall OP1A on Nandira nala. Longitudinal slope and channel section is as given in table 6.16. Figure 6.10 shows the layout of trunk drain from I1 to outfall OP1A on Nandira nala.

Invert level of channel segments of western trunk drain for Mundabasti runoff are given in Table 6.17.

Table 6.16: Channel Section of Trunk Drain to carry Mundabasti runoff

Channel name	Catchment Area(ha)	Carrying Capacity (cumec)	Manning (n)	Slope(s)	Section factor $(Qn/(S)^{1/2})$	Bed Width(B) (m)	Depth(D) (m)
DM70	70	11.312	0.016	0.0023	3.774	3.0	1.5

Table 6.17: Invert level of channel segments along western trunk drain for Mundabasti runoff

Channel Segment (ref Figure 6.11)	Channel name	Length (m)	Slope	Drop in bed level (m)	Invert Level (m)		FGL of surrounding area (m)	Depth of flow in Channel (m)	FSL of flow in channel (m)
					Initial node	End node			
I1-A	DM70	741	0.0023	1.7	69.2	67.5	71	1.5	69.0
A-D	DM70	555	0.0023	1.28	67.5	66.22	71	1.5	67.72
D-E	DM70	463	0.0023	1.06	66.22	65.16	71	1.5	66.66
E-OP1A	DM70	600	0.0023	1.38	65.16	**63.78**	69	1,5	65.28

Depending on site condition a suitable vertical fall shall be required at outfall OP1A such that runoff passes through road culvert with FSL lower than invert level of road and higher than flood level of Nandiri nala. HFL in Nandiri nala is 63.5m and the invert level at outfall OP1A is 63.78 m hence ok. Channel slope cannot be increased further as invert level of channel at OP1A should be above HFL. By decreasing the slope, bed width of channel and hence land requirement to accommodate the channel shall increase which is not desirable.

6.9 NORTH SIDE TRUNK DRAIN FOR MUNDABASTI RUNOFF:

As discussed earlier, there is constraint on availability of land along western boundary in existing plant area of stage I and II. A rectangular concrete channel is proposed along and within the north side plant boundary (figure 6.11). Invert level at inlet I1=71.0 m; invert level at outfall OP6=69.21 (near rail track culvert); length of channel from inlet to outfall=770 m. Slope = (71.0-69.21)/770=0.0023. The channel section is same as given in table 6.16.

It may be noted that the Mundabasti nala at location OP6 passes under a railway culvert. It is observed that some part of the flood plain of this natural drain has been encroached by agricultural fields in downstream (Photo 6.4). Flooding could occur near OP6 due to drainage congestion in downstream. Therefore, the north side trunk drain is to be used till stage I&II are not dismantled to make the land available for west side drain.

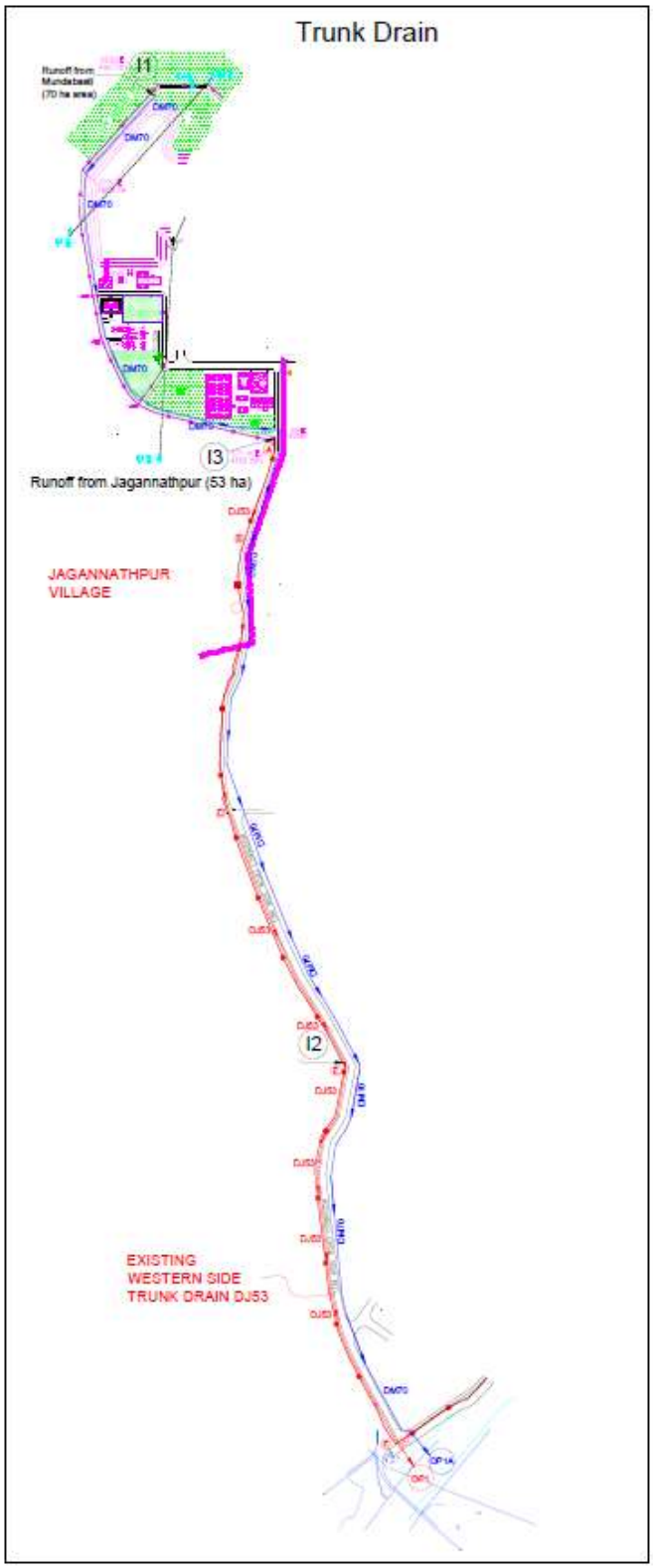


Figure 6.10. The trunk drains on western boundary to carry runoff from Jagannathpur and Mundabasti area

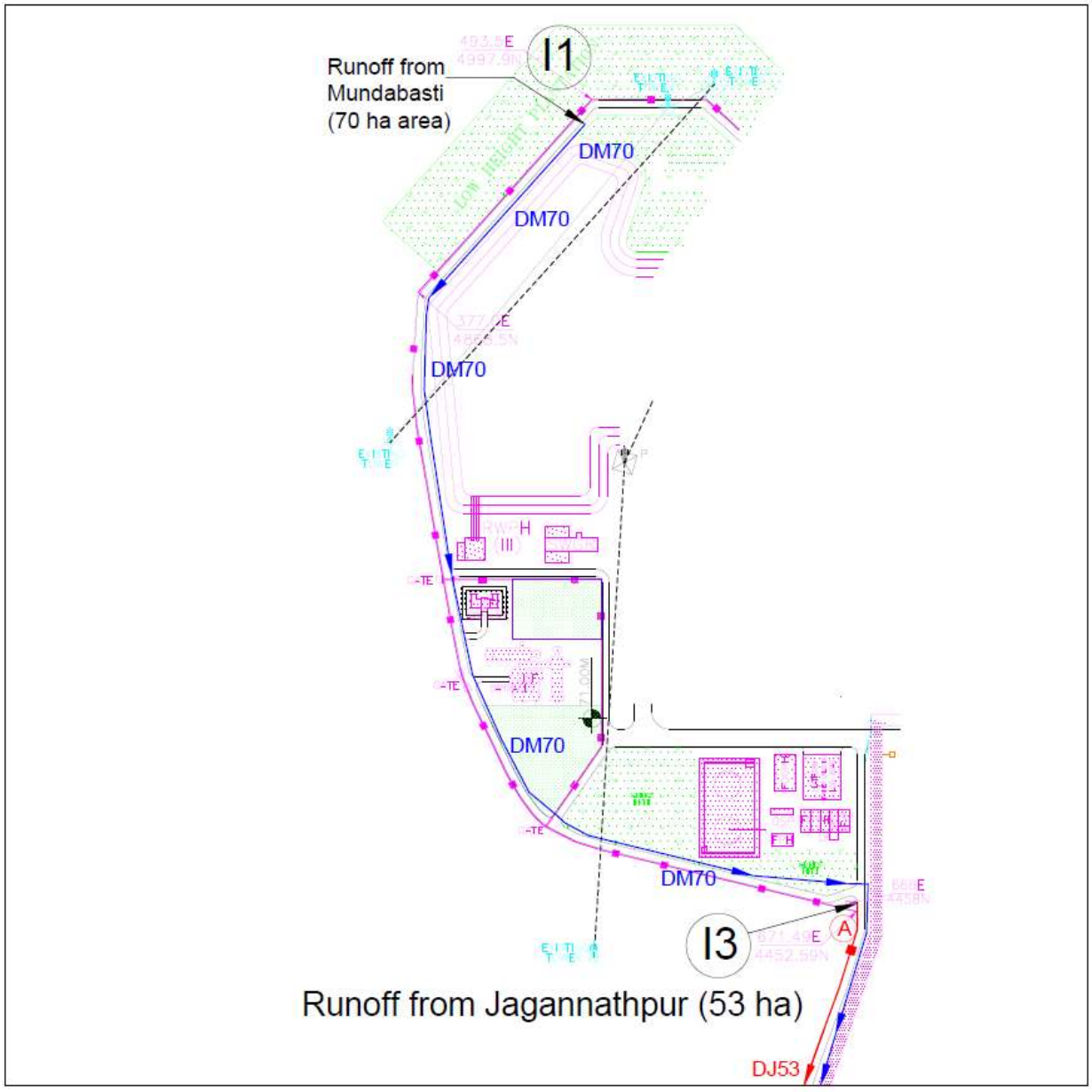


Figure 6.10 (a). Part 1 of The trunk drains on western boundary to carry runoff from Jagannathpur and Mundabasti area

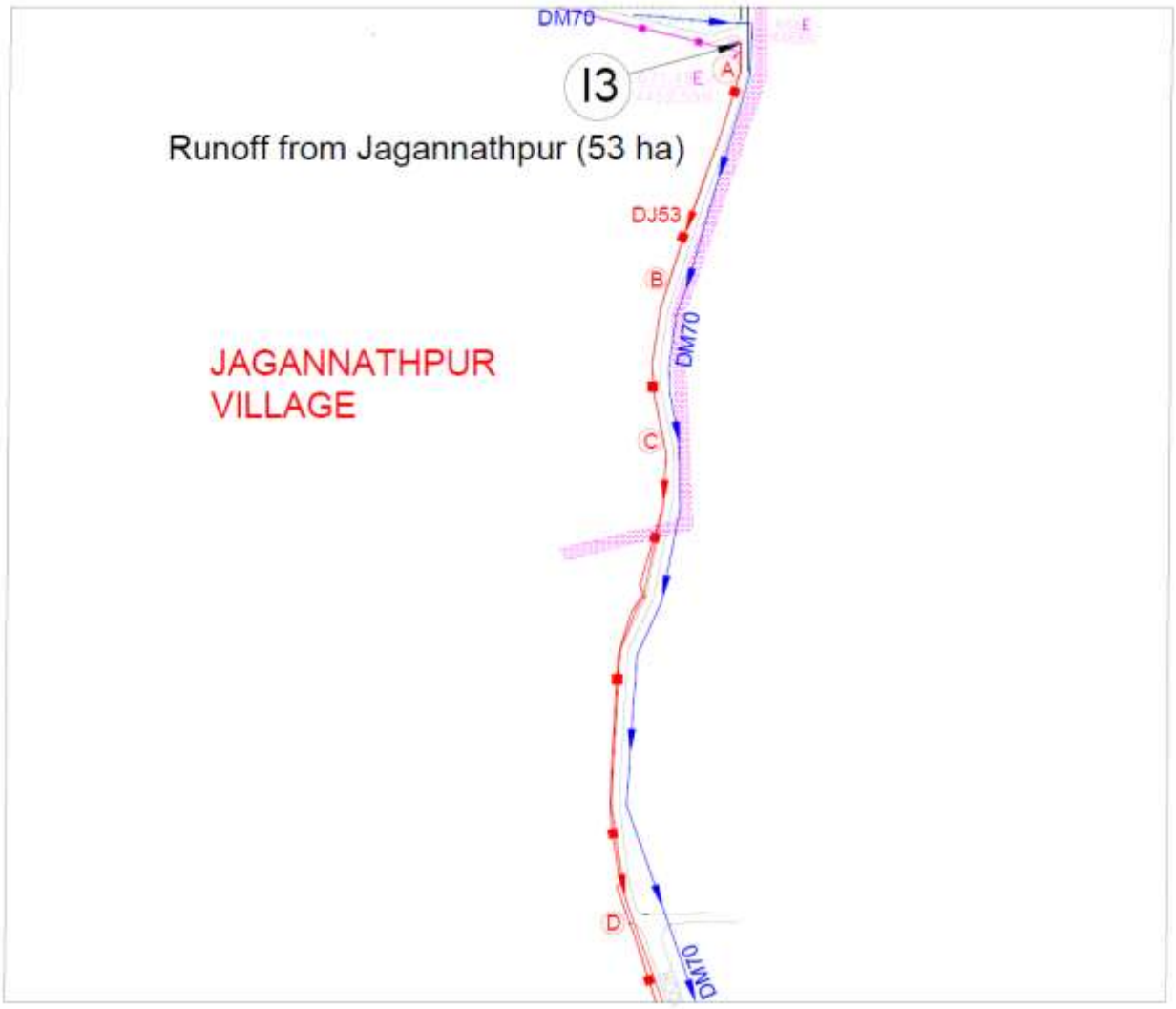


Figure 6.10 (b). Part 2 of The trunk drains on western boundary to carry runoff from Jagannathpur and Mundabasti area

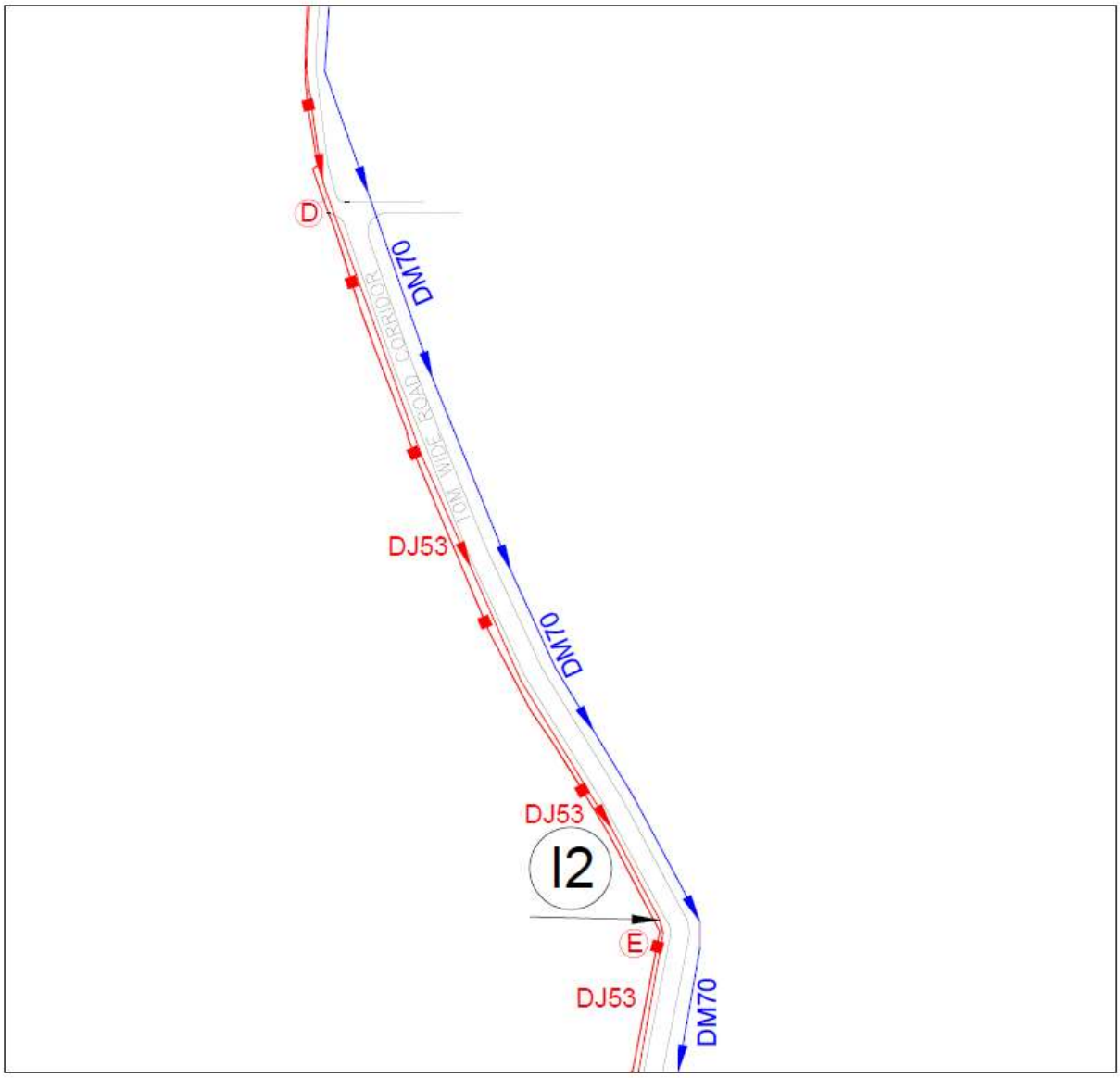


Figure 6.10 (c). Part 3 of The trunk drains on western boundary to carry runoff from Jagannathpur and Mundabasti area

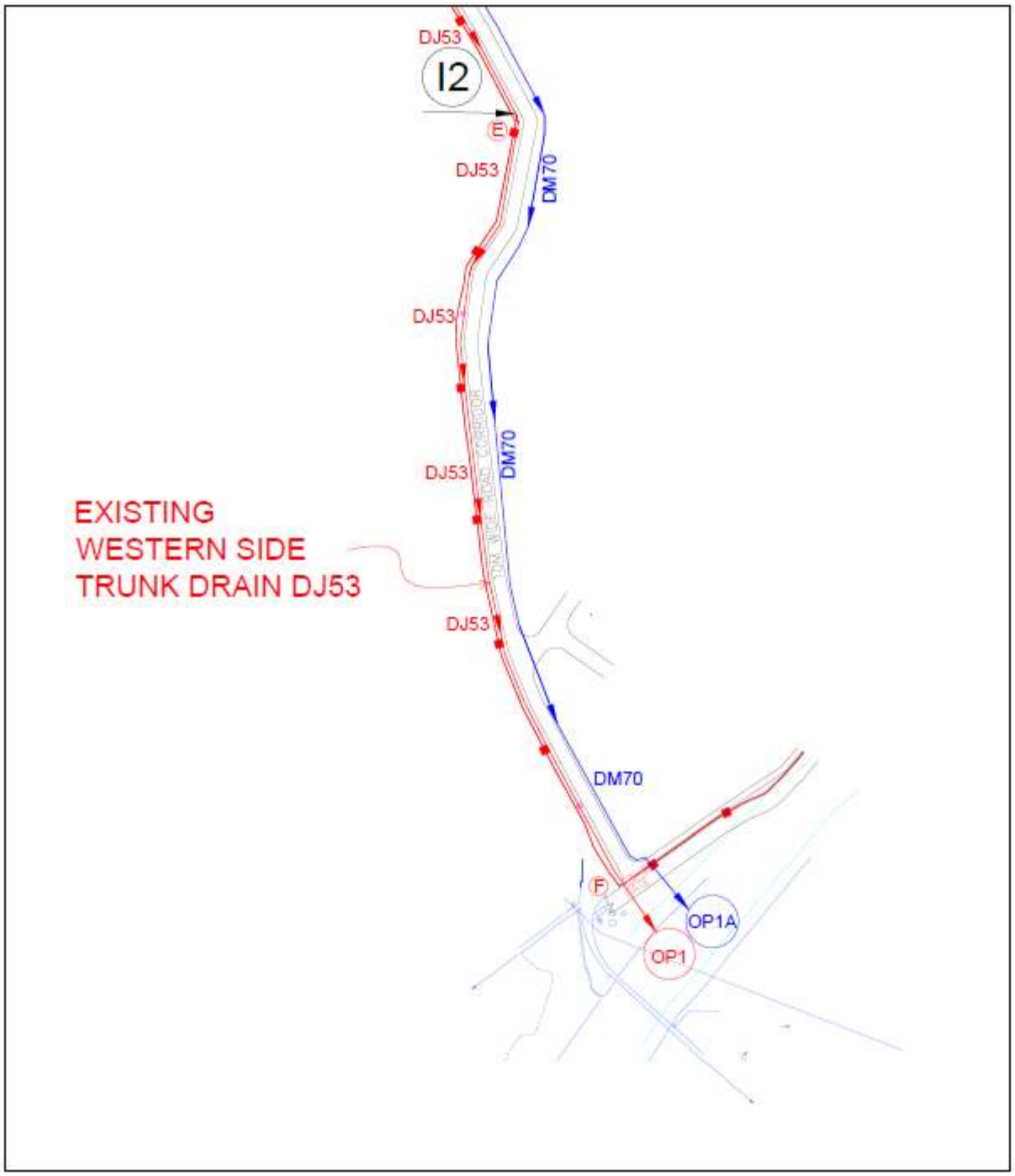


Figure 6.10 (d). Part 4 of The trunk drains on western boundary to carry runoff from Jagannathpur and Mundabasti area

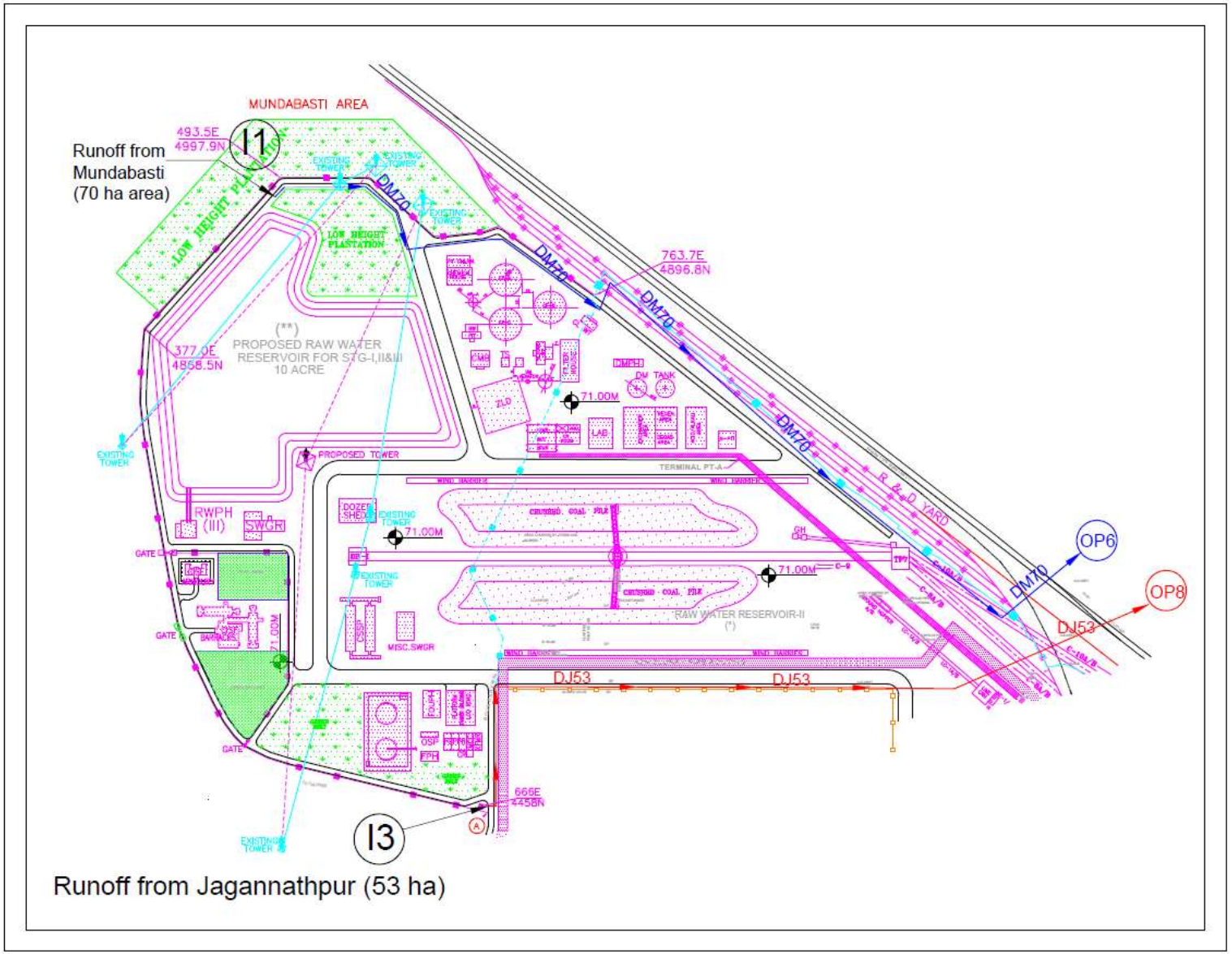


Figure 6.11. The trunk drains to carry runoff from Jagannathpur and Mundabasti area to OP8 and OP6 on Mundabasti Nala

CHAPTER 7
DRAINAGE OF ASH DISPOSAL SITES

7.1 EXISTING AND PROPOSED ASH DISPOSAL AREA

Ash disposal sites consist of i) ash dykes (near Santhapada area) not in service now; ii) mine voids (at South Balanda) being used for ash disposal by TTPS stage I & II and iii) mine voids (at Jagannath) allocated for ash disposal of TTPS stage III.

Ash Dykes Not in Service: Figure 7.1 shows schematic lay out of the ash dykes A, B, C, D, E & F (Abandoned after filling) and ash dykes 1, 2, 3 & 4. Starter dykes of ash dykes 1, 3 & 4 have been partly completed, however these are not used for ash filling. Starter dyke of Ash dyke 2 has been completely utilized & exhausted. 1st raising of Ash dyke 2 has been completed, however it is not used for ash filling. Further work on ash dykes 1, 2, 3 & 4 has been stopped due to environmental considerations.

Photo. 7.1. Filled ash dyke Stage I and II

Photo. 7.2. Ash dyke constructed but (near Brahamini River) not in service

Mine Voids Being used by TTPS stage I&II: Ash is being disposed in the abandoned South Balanda OCP mine voids (Quarry No. 2 & 3) through pipelines (figure 7.2). The decanted water from mine voids is being pumped back to the ash water reservoir situated inside the Talcher TPP. Photo. 7.3 shows the ash filled pilot quarry 2A. Photo. 7.4. shows the mine voids being used by TTPS stage I&II. Photo. 7.5 shows slurry disposal in mine void.

Photo. 7.3. Ash filled pilot quarry 2A

Photo. 7.4. Mine Voids being used by TTPS stage I&II

Photo. 7.5. Slurry disposal at outfall OP3 in mine void

Mine Voids allocated to Talcher Power Plant Stage III for Ash Disposal:

Lean ash slurry shall be pumped from the ash slurry sump through pipelines upto the ash disposal area identified at abandoned Jagannath OCP mine voids of MCL (Quarry No. 4 & 7). Photo. 7.6. shows abandoned quarry No. 4 proposed for ash disposal under stage –III. These mine voids are located about 14 km from the plant (figure 7.2). The decanted water from mine void shall be pumped out by barge mounted pumps to an over ground sump located near the disposal area. The water from this over ground sump shall be pumped to the ash water sump situated inside the power plant for ash slurry preparation thereby reducing the requirement of raw make-up water for the purpose.

Photo. 7.6. Abandoned quarry No. 4 proposed for ash disposal under stage -III

7.2 DRAINAGE PLAN FOR ABANDONED ASH DYKES (A, B, C, D, E, F)

Location of the ash dykes and drainage in vicinity is shown in figure 7.1.

Drainage Design Concept:

For each of the filled ash dyke (A, B, C, D, E, F) following conceptual drain design shall be followed.

i) Low Height Peripheral Embankment: The dyke area will have a 1 to 3 m high earthen embankment around it. Purpose of the peripheral embankment is to prevent entry of storm runoff from small size natural drains surrounding the dyke area. It will depend upon elevation of the dyke and surrounding area. The peripheral embankments can be designed using similar design parameters as for flood control earthen embankments.

ii) Drainage of Embankment Slopes and Blocked Drains on Periphery: A toe drain shall be provided to drain storm runoff on the outer slope of peripheral embankment. The storm runoff from surrounding area will also be carried by this toe drain to Nandiri nala in downstream of the dyke. For detailed design of toe drain of ash dyke embankment, Code of Practice given in Bureau of Standards code IS: 9429: “Code of practice for drainage system for earth and rock filled dams” may be followed.

Figure 7.1: Ash dykes A, B, C, D, E & F (Abandoned) and Ash dykes 1,2,3 & 4

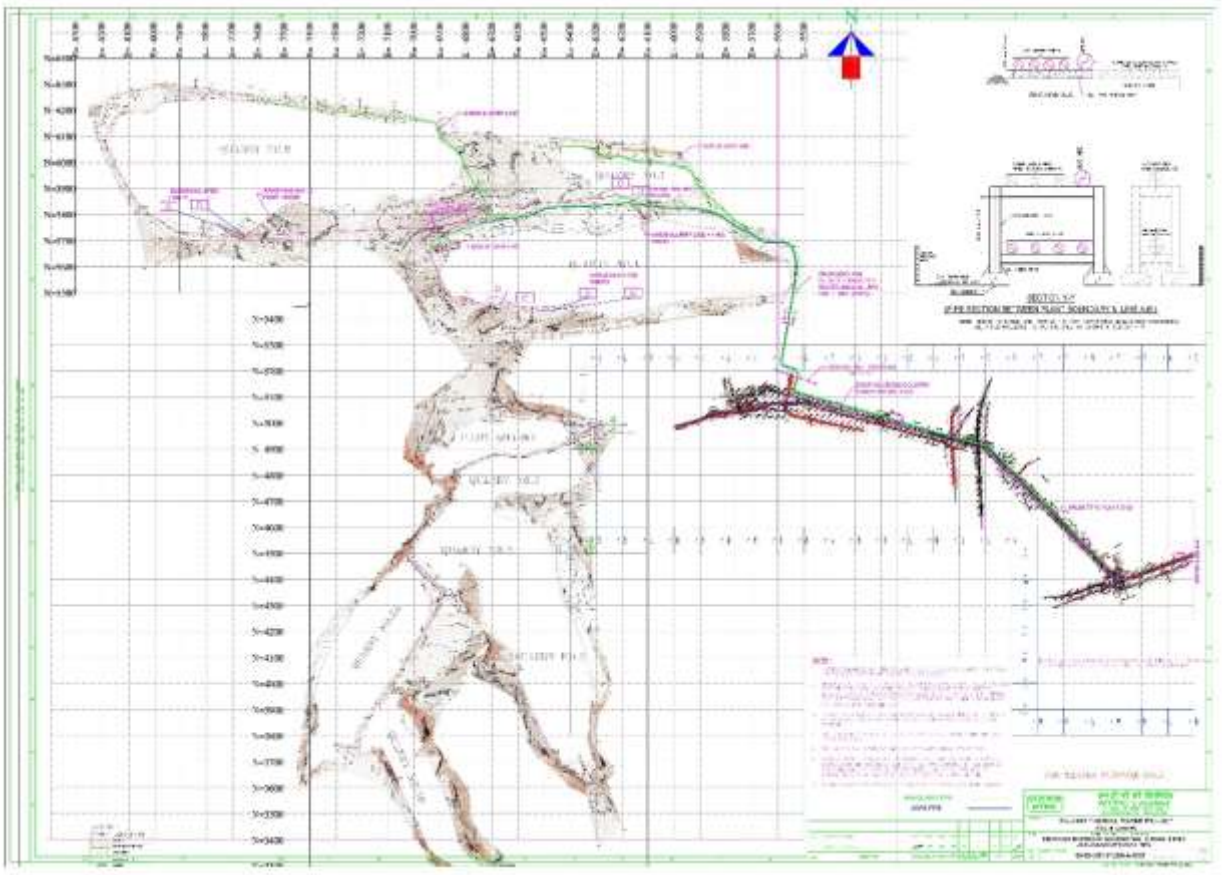


Figure 7.2: Quarry No. 2 & 3(for stage I&2) & Jagannath Quarry No. 4 & 7 (for stage III

iii). Ungated Spillway of Ash Dyke: For safety of ash dykes, ungated spillway may be provided in each abandoned ash dyke to spill the excess storm runoff. For preliminary planning, design discharge is worked out as below(table 7.1). The ungated spillway should have sufficient length to spill this discharge. Internal drainage in plant area(chapter 6) is designed based on specific flood discharge of 0.117 m^3/sec/ha(details in chapter 5).Same concept is used here for estimation of design discharge of spillway

Table 7.1: Design discharge for ungated spillways in the abandoned ash dykes

Ash dyke	Area(acres)	Area(ha) (1acre=0.4047 ha)	Specific discharge m^3/sec/ha	Design discharge m^3/sec
A	24	9.7	0.117	1.13
B	33	13.4	0.117	1.57
C	60	24.3	0.117	2.84
D	19	7.7	0.117	0.9
E	41	16.6	0.117	1.94
F(overflow lagoon)	3.1	1.2	0.117	0.14

iv)Treatment: The consolidated ash surface will be landscaped with flora that survives on the relatively hostile terrain and if necessary polymer layering could be provided in the initial phase of treatment to prevent the ash from being blown by the wind.

v) Drainage: Grass will be planted on the outer slopes of the dyke. Outer slope could be terraced and catch drains, chute channel may be considered as for the over burden dumps discussed in section 7.3.1 below. The runoff shall be taken through a channel to outfall on Nandiri nala.

7.3 DRAINAGE OF ASH FILLED OCP MINE VOIDS (QUARRY NO. 2, 3A,3B)

The South Balanda mine has three quarries namely Quarry-1, Quarry-2 and Quarry 3. The mining activities in Quarry-1,Quarry-2 and Quarry-3A & 3B had stopped in April, 2004. At present ash is being disposed in the abandoned Quarry No. 2, 3A, 3B through pipelines (figure 7.3).

Quarry 2 is partitioned in two parts; part 2A is pilot quarry which is already filled upto 124.5 m amsl. Part 2B is filled upto 123.5m amsl. It is planned to fill Part 2B upto 124.5m amsl. The deepest point in Quarry-2/3 is about RL (+) 75m amsl. The average depth of the quarry is varying from 40 m to 50 m. The quarry area has been estimated based on topography map.

Quarry no. 2: 32.50 ha

Quarry no. 3A: 18.00 ha

Quarry no. 3B: 11.00 ha

Total 61.50 ha.

The DEM of the study area is shown as contour zoning map in Figure 7.4 and elevation variation from 101 m to 161.9 m is depicted through different colours.

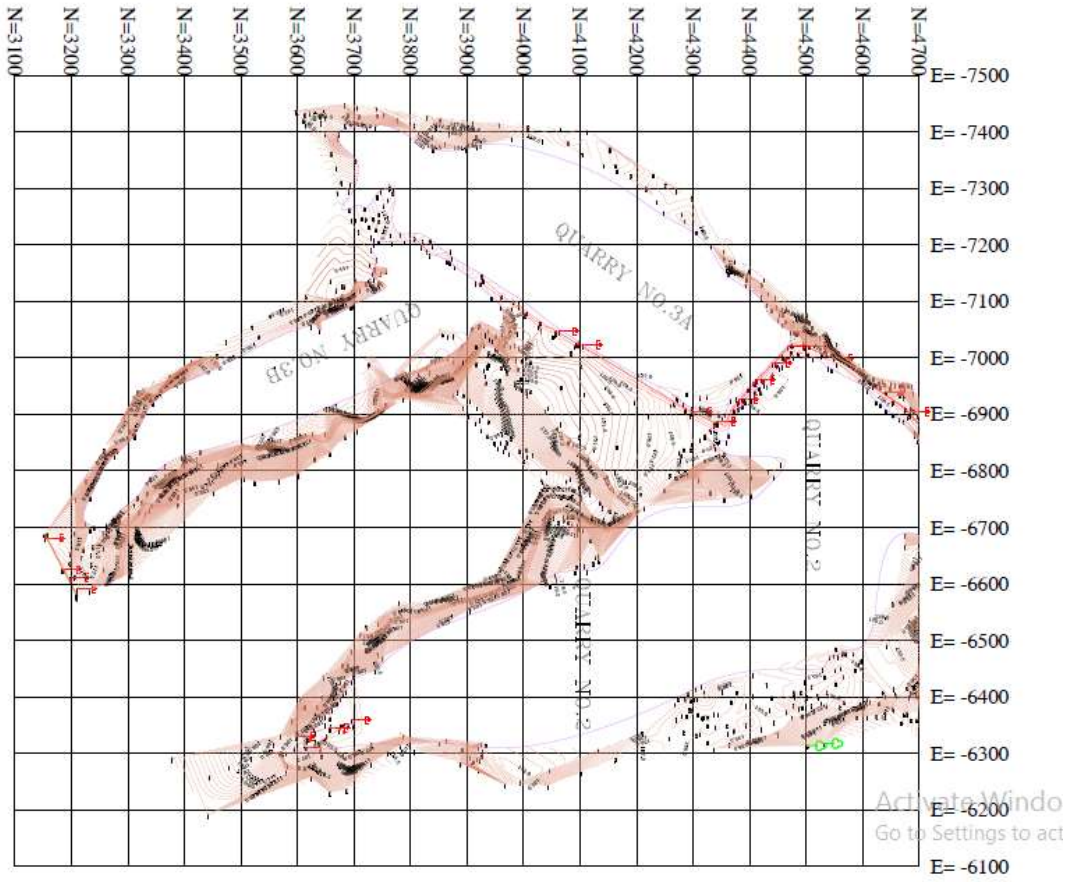


Figure 7.3: South Balanda OCP mine voids (Quarry No. 2 & 3) being used for ash disposal

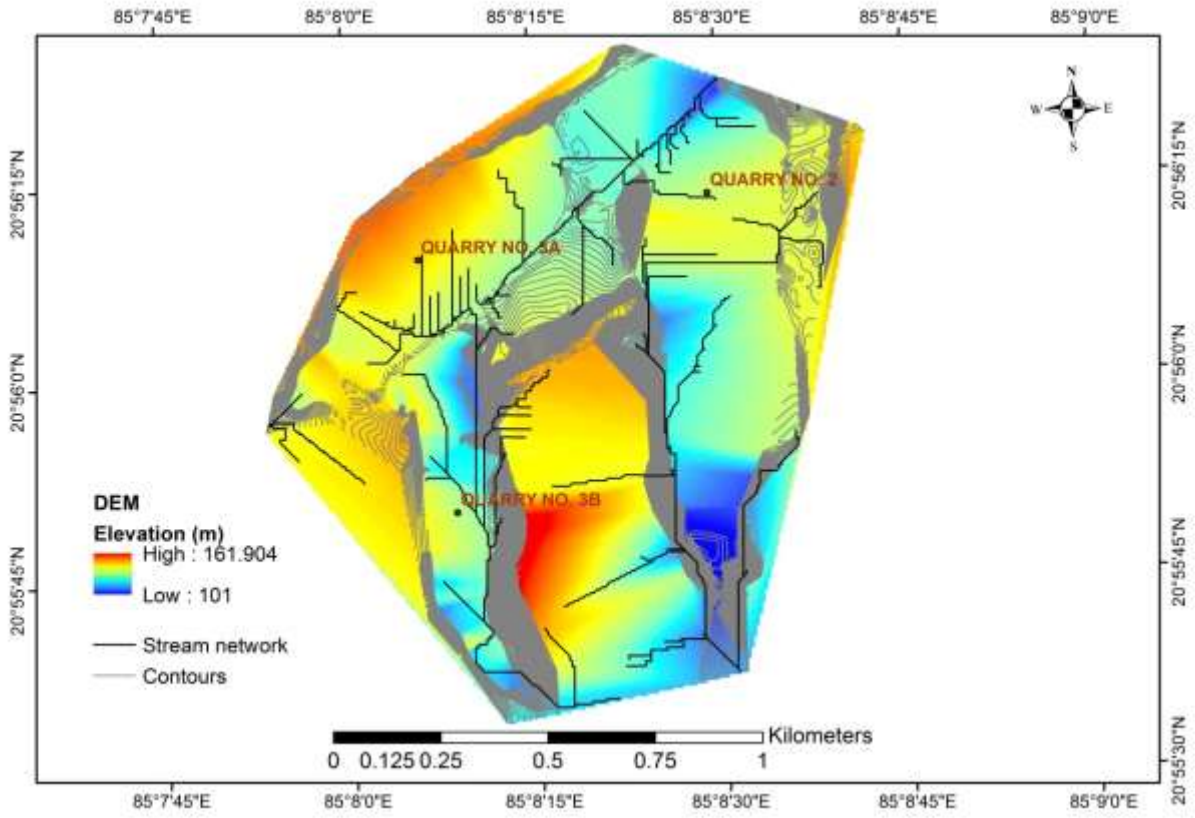


Figure 7.4: DEM of the Quarry No. 2 & 3 being used for ash disposal at present (stage I&II)

7.3.1 Drainage arrangement for the OB Dumps

OB dumps are in the form of hills with steep slope. As OB dumps typically have limited catchments, inflows of surface water tend to be small. However smooth disposal of storm water from overburden dump is extremely essential to avoid gully formation on the dump body (due to steep slope) and also siltation problem of the nearby natural drains. The following steps are proposed for effective drainage:

Low Height Embankment on Periphery of Ash Filled Quarry: The ash filled quarry area will have a 1 to 3 m high earthen embankment around it. Purpose of the peripheral embankment is to prevent entry of storm runoff from OB area into ash fill area. Thus, storm runoff from OB area and that from ash fill area are carried by separate drains towards a common outfall. The peripheral embankments can be designed using similar design parameters as for flood control earthen embankments.

As discussed in chapter 5 and chapter 6, specific flood is 0.117 m^3/sec/ha. The drains shall be designed using this specific flood discharge.

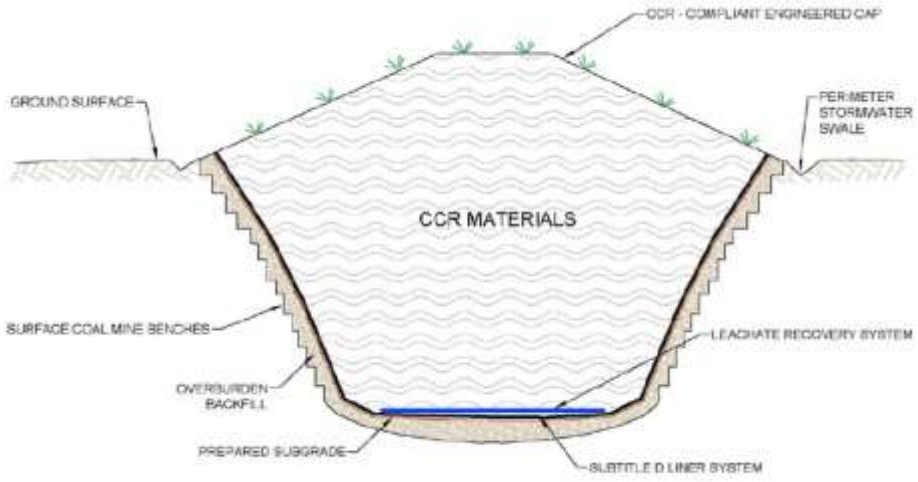
Catch Drain for OB: Overburden on the periphery of the quarries greatly vary in shape, size, height, slope, vegetation etc. Overburden area where plantation has already been done for picnic site is considered here for catch drain design as an example. Its area is approximately 20 ha. The area is partitioned into 4 bench terraces; each terrace having approximately 5 ha area. Considering specific flood discharge as 0.117 m^3/sec/ha, flood discharge of one bench terrace works out to be 0.585 m^3/sec. A concrete lined rectangular open drain having 1.1 m bed width and 0.6 m floe depth (table 7.2) will be provided on inner side of each terrace.

Masonry Chute or Grassed Channel: Flood from upper bench is discharged to the lower benches through masonry chute or a grassed channel, thus minimizing gully formation in the OB area.

Foot drain: A foot drain of proper size depending on size of each OB will be provided along the periphery of OB and sloping in north south direction. This drain will collect run-off from face of dump and direct it to an outfall at southern end of quarry.

7.3.2 Drainage arrangement for Ash Fill Area

Conceptual drawing of ash filled mine void is given in figure 7.5.



Note: CCR: coal combustion residuals

Figure 7.5: Conceptual drawing of ash filled mine void

Once the ash filling has reached a level of 124.5 m amsl (quarry 2, 3A,3B), the plots will be leveled, graded and cleared of large stone pieces lying on the surface. A slope towards periphery will be provided (preferably less than 2%) as shown in the figure 7.5. The graded and leveled area will be divided into small sectors and small check bunds will be constructed to retain moisture and humus in the soil. The drainage arrangements are as follows:

Peripheral drain (perimeter storm water swale) shall be provided to collect storm runoff (in excess of ponding by check bunds) from the ash filled area. DEM (figure 7.4) shows that natural slope in vicinity of quarry 2, 3A and3B is in north-south direction. Therefore, the drains in general shall be sloping in north-south direction.

The size of drains carrying storm runoff from OB area are given in table 7.2 below.

Table 7.2: Design of Channels for storm runoff in Existing & Proposed Ash Fill Quarries

Channel name	Runoff contributing area (ha)	Carrying Capacity (cumec)	Manning roughness coeff (n)	Slope (S) 1:1000	Section factor $(Qn/(S)^{1/2})$	Bed Width (B) (m)	Depth (D) (m)
OB terrace drain	5	0.585	0.016	0.001	0.296	1.1	0.6
OB foot drain FD5	5	0.585	0.016	0.001	0.296	1.1	0.6
OB foot drain FD10	10	1.17	0,016	0.001	0.592	1.5	0.75
OB foot drainFD15	15	1.755	0.016	0.001	0.888	1.75	0.87
OB foot drain FD20	20	2.34	0.016	0.001	1.184	1.91	1.00
Outfall channel QD20	20	2.34	0.016	0.001	1.184	1.91	1.00
Outfall channel QD40	40	4.68	0.016	0.001	2.368	2.9	1.1
Outfall channel QD60	60	7.02	0.016	0.001	3.552	3.0	1.5

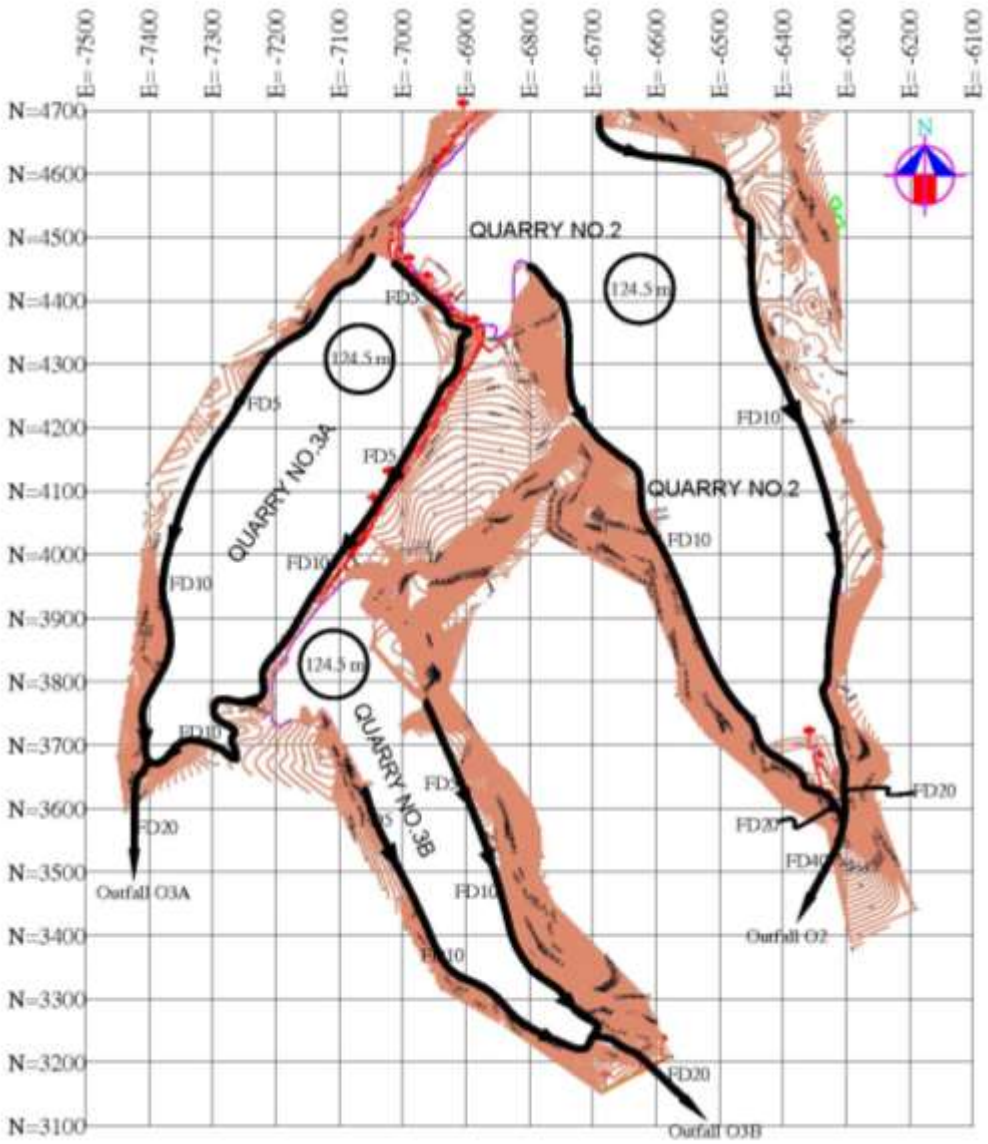


Figure 7.6 Layout of the drain for ash fill area in quarry 2, 3A and 3B.

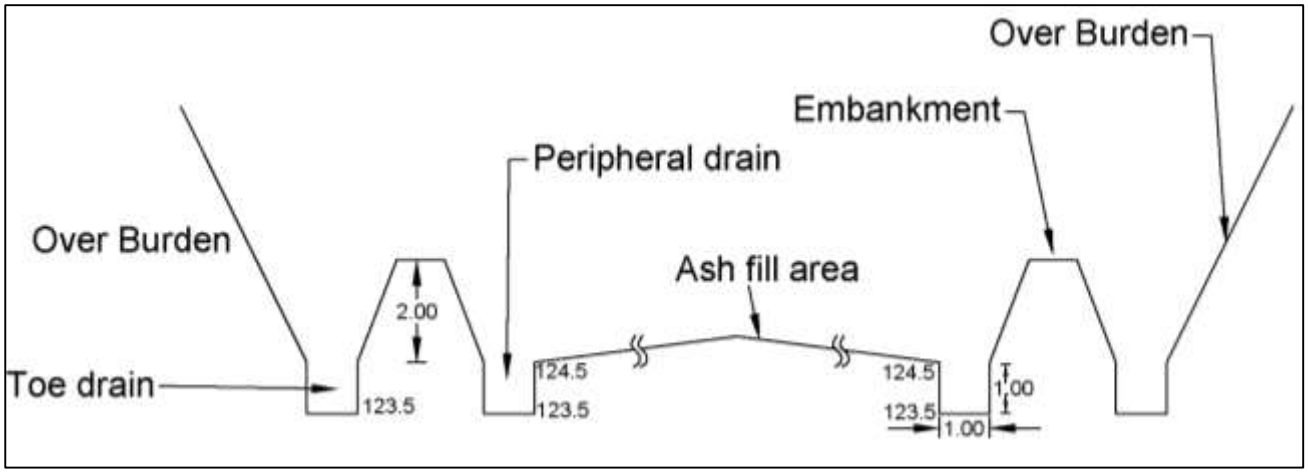


Figure 7.7 Sectional view of OB toe drain, ash fill area peripheral drain and low height embankment in between.

Drainage of Mine Voids Allocated for proposed Talcher TP Project, Stage-III (2×660 MW)

The ash disposal area is identified at abandoned Jagannath OCP mine voids of MCL (Quarry No. 4 & 7) located about 14 Km from the plant (figure 7.8). The DEM of the mine void area and vicinity is shown as contour zoning map in Figure 7.9 and elevation variation from 71.5 m to 155.25 m is depicted through different colours. DEM of the area (figure 7.9) shows that ground is sloping in north-west direction.

As shown in figure 7.6, the rain water over mine void area and decanted water(of ash slurry) from mine void shall be pumped out by barge mounted pumps to an over ground sump located near the disposal area. The water from this over ground sump shall be pumped to the ash water sump situated inside the power plant for ash slurry preparation thereby reducing the requirement of raw make-up water for the purpose.

Storm runoff from the OB area around the mine voids shall not be allowed to enter the mine void. Drainage arrangement for OB of quarries 4 and 7 will be on the same pattern as for quarries 2,3A,3B discussed in section 7.3.1. Catch drains and foot drains shall be provided to safely discharge the storm runoff to natural drains (tributaries of Bangaru nala). Local drainage is controlled by a small seasonal nala flowing northerly in the western part of Jagannath block. This nala joins Bangaru nala flowing easterly to the north of Jagannath Coal Mines.

Figure 10 shows layout of the peripheral drain network for ash fill area in quarry 4, quarry7 and quarry 8.

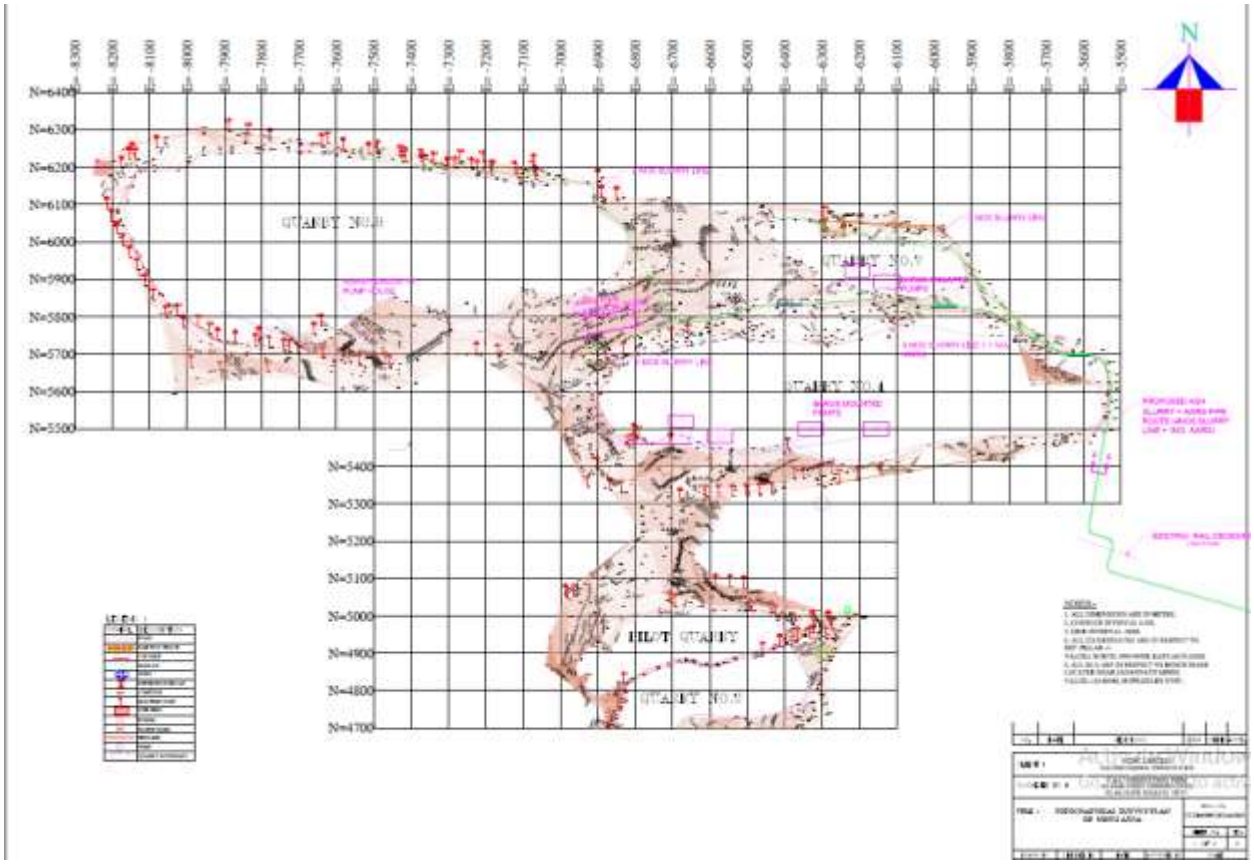


Figure 7.8 Jagannath OCP mine voids (Quarry No. 4 & 7) for ash filling during Stage-III

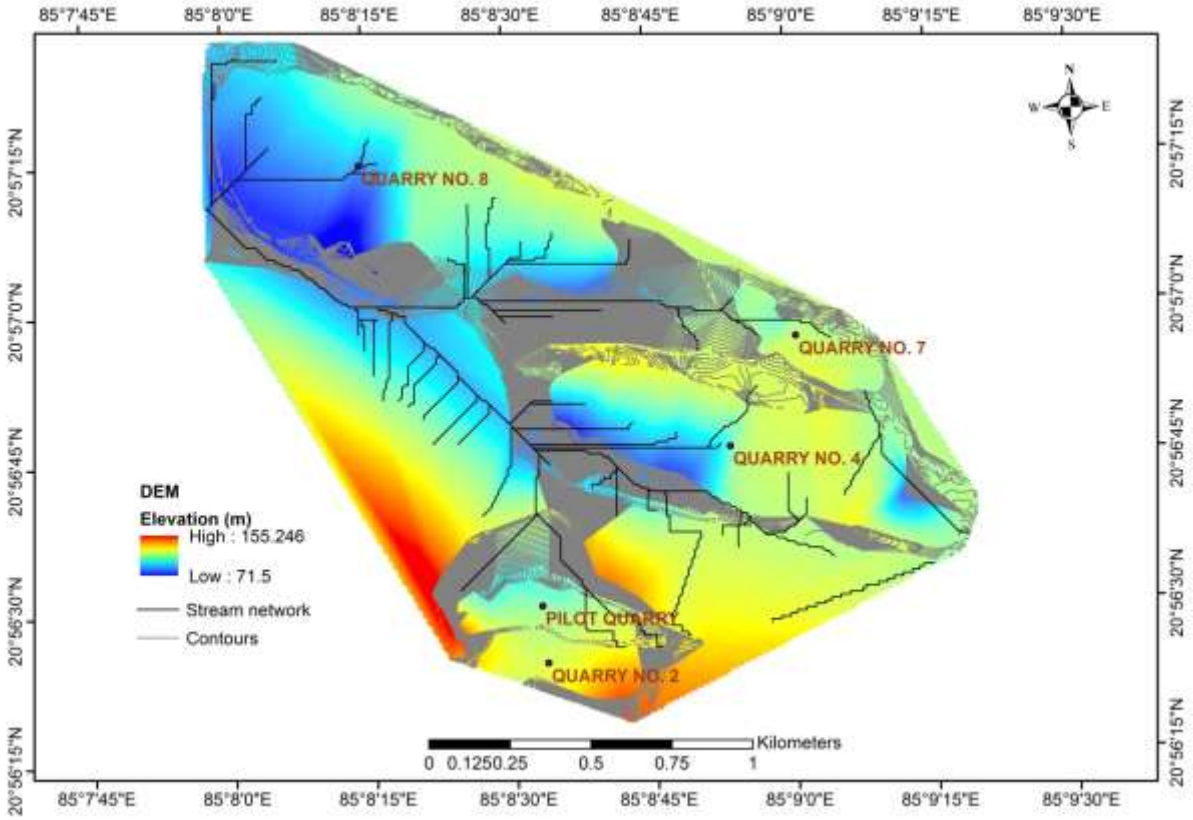


Figure 7.9: DEM of the Jagannath mine voids (Quarry No. 4 & 7) for ash disposal in Stage III

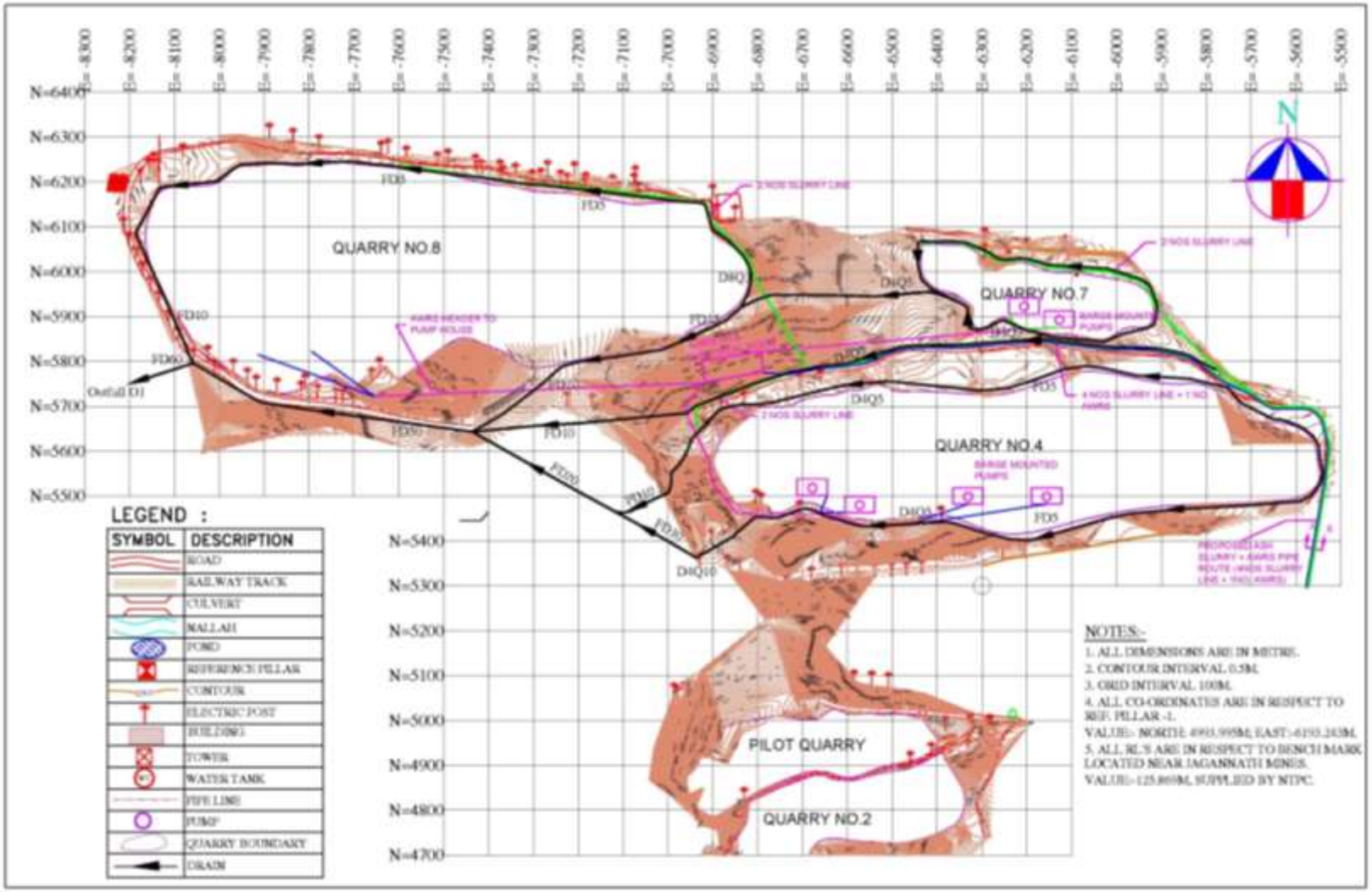


Figure 7.10 Lay out of drains on periphery of Quarry 4, Quarry7 and Quarry8

D-1-12(M)

ANNEXURE – M

Specification For High Performance Moisture Compatible Corrosion Resistant Coating System

a) Providing & applying **High Performance Moisture Compatible Corrosion Resistant Coating System** manufactured as per technical specifications of Central Electrochemical Research Institute, Karaikudi, (C.S.I.R. affiliate Institute), Tamil Nadu, Pin - 630 006.

b) The coating system shall be water compatible, compatible for applying in wet conditions also and shall be tolerant to under-prepared surfaces and existing residual tar / paint. The system shall also be quick curing so as to be suitable for application during shut downs.

The coating material shall be stored in the manner as per recommendations of the manufacturer until ready for use. The coating material shall be used within the manufacturer's written recommended shelf life.

c) The coating system shall conform to the following :

PROPERTIES OF PAINT

Base	High Performance Moisture Compatible Corrosion Resistant Coating System CECRI know-how system
Volume Solids	70%
Specific Gravity (ASTM-D-1475)	1.25 ± 0.1
Dry Film Thickness (ASTM-D-1186)	160 ± 10 µm per coat
Coverage	4 - 4.5 sq.m/ ltr
Touch Dry	2 Hours
Recoating	24 Hours

PROPERTIES OF COATING

Salt Spray (ASTM-B 117)	2000 Hours
Resistance to sea water (Carried out upto 6 months)	Passes
Coating Resistance (Carried out upto 6 months)	10^9 Ω. cm^2
Adhesion (ASTM-D 4541)	4.5 N/mm Sq
Flexibility (ASTM-D-522) Elongation	1/8" passes 33%
Impact (ASTM G 14–04)	45 cm passes

d) Paint material & its application method shall be obtained from any manufacturer who has been granted License by CECRI, Karaikudi for technical know how for **High Performance Moisture Compatible Corrosion Resistant Coating System**. The application method of coating shall be got duly approved from CECRI, Karaikudi.

Annexure-P

Details of facilities to be dismantled

Sl. No.	Name of facility	Total No. of Units	Plinth Area per Unit {Sq.m.}	Total Plinth Area {Sq.m.}	Type of Super-structure	Type of Sub-structure	Storey Configuration	Scope of Dismantling	Facilities envisaged under TTPS Stage-III	Type & Present Location of facility
1	E-type & F-type Qrts in BHEL sector	39	150	5850	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Triple storey	Sub-structure	PT Plant	**Residential facilities in Township area**
2	4R3/4 - Temp Sector	1	620	620	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Inplant Railway siding	
3	3R21/22 - Sector 2	1	350	350	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant - Transformer Yard	
4	2R 121 -136 - Sector 2	4	150	600	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Switchyard CR & Canteen	
5	2R 49-68 - Sector 2	5	190	950	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant - TG Bay	
6	2R 69-108 - Sector 2	10	150	1500	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant - tranformer Yard & FO Handling area	
7	2RA 109-139- Sector 2	10	150	1500	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Switchyard	
8	F type - Sector 1	7	170	1190	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Inplant Railway siding	
9	1R type - Sector 2	16	220	3520	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	FO handling area, Aux. Boiler, CT & Switchyard	
10	2RB type - Setor 3	4	140	560	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Admin Building area	
11	C 3/4 - Sector 1	1	220	220	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double Storey	Sub-structure	Inplant Railway siding	
12	C9-12 - Sector 3	2	220	440	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double Storey	Sub-structure	Admin Building area	
13	D type 9-13/21-32 - Sector 3	5	300	1500	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double Storey	Sub-structure	Switchyard	
14	2R 7 2RA - Sector 4	15	200	3000	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Construction Office & Workshop	
15	3R 1-16 Sector 2	8	350	2800	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant - TG Hall & FO handling area	
16	3R 17-21/ 62-65	4	350	1400	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Inplant Railway siding	
17	NC 1-4 Temp sector	1	400	400	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double Storey	Sub-structure	Inplant Railway siding	
18	ND 1-8 Temp sector	8	200	1600	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Inplant Railway siding	
19	E 139-186 Temp sector	8	150	1200	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Triple storey	Sub-structure	Track Hopper + Ash Silo	
20	F 1-56 Sector 4	7	300	2100	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double Storey	Sub-structure	BOP Batching Plant area	
21	Club Auditorium	1	698	698	RCC structure with Brick in-fill panels + Structural Steel roof	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant area - ESP	**Non-residential facilities in Township area**
22	Club dining hall	1	556	556	RCC structure with Brick in-fill panels	RCC foundation with PCC mudmat	Single storey	Sub-structure	Main Plant area - ESP	
23	Stadium gallery	1	1170	1170	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double Storey	Sub-structure	Main Plant area - Boiler	
24	POLICE OUTPOST	1	128	128	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - TG Bay	
25	Outpost front shop	1	49	49	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - TG Bay	
26	Medicine store	1	32	32	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - TG Bay	
27	ATM (SBI)	1	15	15	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - TG Bay	
28	Cable tv room	1	46	46	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - Transformer Yard	
29	Mangla mandir	1	75	75	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - Transformer Yard	
30	Kalayani Mandap	1	82	82	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - Transformer Yard	
31	shopping centre	1	600	600	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - Transformer Yard	
32	Sai mandir	1	90	90	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Ash Silo	
33	Durga Mandap	1	575	575	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant - Transformer Yard	
34	CISF Barrack - quarter guard	1	520	520	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Track Hopper	
35	CISF Barrack Morcha	1	16	16	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Track Hopper	
36	Primery school	1	2348	2348	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	FGD area	
37	DAV TT HIGH SCHOOL	1	1410	1410	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant area -ID Fan	
38	BHEL Market	1	1500	1500	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	PT Plant	
39	LITTLE ANGEL SCHOOL	1	250	250	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double storey	Sub-structure	Main Plant area - Boiler	
40	DAV TT HIGH SCHOOL	1	1053	1053	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant area -ID Fan	
41	BANK BUILDING	1	742	742	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double storey	Sub-structure	AWRS & Ash classification	
42	T/S Civil Office	1	100	100	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Double storey	Sub-structure	CWPH	
43	T/S Civil Office Store	1	400	400	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	CWPH	
44	BADMINTON HALL	1	406	406	Structurel Steel with sheet cladding	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant area - Boiler	
45	OAT Stage	1	298	298	Structurel Steel with Brick in-fill panels	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant area - ESP	
46	OLD EWA Building	1	221	221	Structurel Steel with Brick in-fill panels	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant - Transformer Yard	
47	OLD UPL Building	1	106	106	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Chmney	
48	WATER TANK & PUMP HOUSE	1	200	200	RCC structure with Brick in-fill panels	RCC foundation with PCC mudmat	Triple storey	Sub-structure	Chimney	
49	T/S ELECTRICAL OFFICE	1	664	664	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Chimney	
50	CISF BARRACK	1	3328	3328	Structurel Steel with Brick in-fill panels	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Track Hopper	
51	GAS GOWDOWN	1	122	122	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Sub-structure	Track Hopper	
52	SAI MANDIR SHED	1	133	133	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Ash Silo	
53	RC	1	2880	2880	RCC structure with Brick in-fill panels + Structural Steel roof	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant - Transformer Yard	
54	Security barrack	1	1084	1084	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant area - ESP	
55	DAV TT H.SCHOOL C.STAND	1	365	365	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant area -ID Fan	
56	GRIDCO OFFICE	1	347	347	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Chimney	
57	Ash Brick manufacturing Plant	2	750	1500	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Switchyard	
58	Vehicle Parking Sheds	1	400	400	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant area	
59	Store Sheds	28	640	17920	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Sub-structure	Main Plant - Ash handling, TAC,CAC & ESP	
60	Under ground Diesel tank	1	100	100		Under ground RCC sump		Sub-structure	Main Plant - ID fan area	
61	Watch Towers	7	20	140	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Triple storey	Sub-structure	Main Plant & CHP area	
62	Admin Building	1	2998	2998	RCC structure with Brick in-fill panels	RCC foundation with PCC mudmat	Double storey	Sub-structure	Main Plant area -CPU area	
63	C&M office Building	1	378	378	RCC structure with Brick in-fill panels	RCC foundation with PCC mudmat	Double storey	Sub-structure	Main Plant area -TAC	
64	Old Admin BUILDING	1	1622	1622	RCC structure with Brick in-fill panels	RCC foundation with PCC mudmat	Double storey	Sub-structure	Main Plant area - Boiler	
65	Safety building	1	103	103	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant area -CPU area	
66	Weigh Bridge Room	1	40	40	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant area -TAC	
67	DG room	1	53	53	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant area -CPU area	
68	plant tea stall	1	86	86	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Sub-structure	Main Plant area - Boiler	
69	Stage-I Raw water reservoir	1	21000	21000		CC lined under-ground reservoir		Super-structure & Sub-structure	CHP area - CH, coal stock pile & Gypsum area	
70	Heavy Machinery shed	1	320	320	Structural Steel shed	RCC foundation with PCC mudmat	Single Storey	Super-structure & Sub-structure	CHP area - CH	
71	Waste water sump & Pumphouse	1	100	100	Structural Steel shed	Under ground RCC sump	Single Storey	Super-structure & Sub-structure	TP-1 & Inplant Railway siding	

72	Waste storage shed	1	180	180	Structurel Steel shed	RCC foundation with PCC mudmat	Single Storey	Super-structure & Sub-structure	CHP area	**Facilities in Plant area**
73	Stage-II Raw water reservoir	1	20000	20000		CC lined under-ground reservoir		Super-structure & Sub-structure	CHP area - coal stock pile, truck tippler, TP-9 & Dozer shed	
74	Stage-II Raw Water Pumphouse	1	200	200	RCC structure with Brick in-fill panels	Under ground RCC sump	Double storey	Super-structure & Sub-structure	TP-8	
75	Stage-II PT Plant clarifiers	2	1100	2200	RCC Over-ground 30m dia	RCC foundation with PCC mudmat	Single Storey	Super-structure & Sub-structure	Pipe conveyor	
76	Stage-II PT Sludge sump & Pumphouse	1	80	80	Structural Steel shed	Under ground RCC sump	Single Storey	Super-structure & Sub-structure	Pipe conveyor	
77	Stage-II PT Plant Building including clarified/Filtered water Pumphouse, sump, Chemical House etc..	1	700	700	RCC structure with Brick in-fill panels	Under ground RCC sump	Double storey	Super-structure & Sub-structure	Pipe conveyor	
78	AAQMS Room	1	20	20	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single storey	Super-structure & Sub-structure	CSSP	
79	Cylinder Shed	1	70	70	Structurel Steel	RCC foundation with PCC mudmat	Single Storey	Super-structure & Sub-structure	CSSP	
80	Coal Slurry Settling pit	1	1200	1200		brick masonry under-ground pit		Super-structure & Sub-structure	Coal stock Pile	
81	Dozer shed	1	500	500	Structurel Steel shed	RCC foundation with PCC mudmat	Single Storey	Super-structure & Sub-structure	Coal stock Pile	
82	Coal yard shed	1	1000	1000	Structurel Steel shed	RCC foundation with PCC mudmat	Single Storey	Super-structure & Sub-structure	BOP Laydown area	
83	TP-14	1	180	180	Structurel Steel shed with side cladding	RCC foundation with PCC mudmat	Triple storey	Super-structure & Sub-structure	Coal stock Pile	
84	Ground Conveyor 16A/B - 2m wide 600m long	1	1200	1200	Ground conveyor along with stacker-Reclaimer support rails			Super-structure & Sub-structure	Coal stock Pile	
85	Conveyor 17 - overground - 5m wide 275m long	1	1375	1375	Overhead structural steel conveyor gallery	RCC foundation with PCC mudmat		Super-structure & Sub-structure	BOP Laydown area	
86	Conveyor 17 - underground - 5m wide 80m long	1	400	400		Under-ground RCC tunnel		Super-structure & Sub-structure	BOP Laydown area	
87	Site Store sheds	1	1500	1500	Brick masonry load bearing walls	Brick masonry foundation with PCC mudmat	Single Storey	Super-structure & Sub-structure	Coal stock Pile	

D-1-12(C)

Annexure (C)

GEOTECHNICAL DATA

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 02/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 1

Co-ordinates E=1321 N=4260

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	2	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	2
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 20/08/17
Completion Date : 23/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.273 m.
Water Struck At :
Standing Water Level : 1.80 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Very dense, yellowish grey, silty sand with boulder. (SM)		100 5.0 cm Penth. Refusal	DS-1	0.50
		100 2.0 cm Penth. Refusal	*SPT-1	1.00-1.05
			*SPT-2	1.10-1.12
1.10m. Moderately to slightly weathered, yellowish grey, fine grained, highly fractured sandstone.		NX rotary drilling from 1.10m to 16.10m	R1	CR=56% RQD=NIL
			R2	CR=52% RQD=NIL
			R3	CR=60% RQD=16%
			R4	CR=64% RQD=NIL
			R5	CR=66% RQD=18%
			R6	CR=72% RQD=NIL
5.60m. Slighty weathered / fresh, grey, fine grained, moderately fractured sandstone.			R7	CR=68% RQD=NIL
			R8	CR=72% RQD=NIL
			R9	CR=70% RQD=32%
			R10	CR=84% RQD=32%
			R11	CR=76% RQD=23%
			R12	CR=78% RQD=16%
			R13	CR=82% RQD=24%
			R14	CR=76% RQD=23%
			R15	CR=83% RQD=36%
			R16	CR=78% RQD=48%
			R17	CR=88% RQD=24%
			R18	CR=85% RQD=52%
			R19	CR=96% RQD=80%
N.B. - '*' means sample could not be recovered. 16.10m.				16.10

BH-1/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 17/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 2

Co-ordinates E=1420 N=4257

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
		Disturbed (DS)	3
Vane (V)		Water Sample (WS)	1

Commencement Date : 29/07/17
Completion Date : 02/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 72.492 m.
Water Struck At :
Standing Water Level : 1.20 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Medium dense, brownish yellow silty sand with kankars. (SM)		10 8 16 — 24	DS-1	0.50
			UDS-1	1.00-1.45
			WS-1	1.20
			SPT-1	1.45-1.90
			DS-2	2.50
3.00m		32		
Hard, deep yellow, silty clay / clayey silt with sand mixture. (Cl)		6 10 22	SPT-2	3.00-3.45
			DS-3	4.00
		Refusal	SPT-3	4.50-4.60
		100 10.0 cm Pentn.		
4.80m		Refusal 100 2.0 cm Pentn.	*SPT-4	4.80-4.82
		NX rotary drilling from 4.60m to 30.05m	R1	CR=28% RQD=NIL 4.80 - 5.55
			R2	CR=32% RQD=NIL 5.55 - 6.30
			R3	CR=26% RQD=NIL 6.30 - 7.05
Highly weathered, greyish yellow, fine to medium grained, fractured sandstone.			R4	CR=30% RQD=NIL 7.05 - 7.80
			R5	CR=30% RQD=NIL 7.80 - 8.55
			R6	CR=28% RQD=NIL 8.55 - 9.30
			R7	CR=30% RQD=NIL 9.30 - 10.05
			R8	CR=27% RQD=NIL 10.05 - 10.80
			R9	CR=28% RQD=NIL 10.80 - 11.50
11.50m			R10	CR=75% RQD=53% 11.50 - 12.25
			R11	CR=85% RQD=19% 12.25 - 13.00
Slightly weathered / fresh, deep grey, fine to medium grained, fractured sandstone.			R12	CR=76% RQD=20% 13.00 - 13.75
			R13	CR=72% RQD=NIL 13.75 - 14.50
			R14	CR=75% RQD=NIL 14.50 - 15.25
15.25m				

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 17/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 2

Co-ordinates E=1420 N=4257

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 29/07/17
Completion Date : 02/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 72.492 m
Water Struck At :
Standing Water Level : 1.20 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
15.25m.				
			R15	CR=85% RQD=NIL
				16.00
			R16	CR=89% RQD=NIL
				16.75
			R17	CR=81% RQD=NIL
				18.25
			R18	CR=61% RQD=NIL
				19.75
			R19	CR=85% RQD=NIL
				20.50
			R20	CR=83% RQD=NIL
				21.25
			R21	CR=80% RQD=NIL
Slightly weathered / fresh, deep grey, fine to medium grained, fractured sandstone.				22.75
			R22	CR=87% RQD=NIL
				24.25
			R23	CR=92% RQD=25%
				25.75
			R24	CR=81% RQD=NIL
				27.25
			R25	CR=85% RQD=NIL
				28.75
			R26	CR=86% RQD=08%
30.05m.				30.05

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 22/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 3

Co-ordinates E=1510 N=4270

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 19/08/17
Completion Date : 20/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.643 m.
Water Struck At :
Standing Water Level : 1.10 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of deep brownish grey, silty sand with brick bats.			DS-1	0.50
			*UDS-1	1.00-1.45
1.65m.		16		
Very stiff to hard, greyish brown, silty clay with fine sand mixture. (Cl)		5 7 9	SPT-1	1.55-2.00
		42 57 >100	SPT-2	2.10-2.30
2.30m.		5.0 cm Penth.		
Very dense, yellowish brown, silty fined sand with rock dust. (SM)		100 Refusal	*SPT-3	2.45-2.48
		3.0 cm Penth.	DS-2	2.50
2.55m.		100 Refusal	*SPT-4	2.55-2.58
		3.0 cm Penth.		2.55
		NX rotary drilling from 2.55m to 20.00m	R1	CR=24% RQD=NIL
				3.25
			R2	CR=28% RQD=NIL
				4.00
			R3	CR=36% RQD=NIL
				4.75
Highly to moderately weathered, yellowish brown, fine to medium grained, highly fractured sandstone.			R4	CR=46% RQD=NIL
				5.50
			R5	CR=40% RQD=16%
				6.25
			R6	CR=42% RQD=18%
				7.00
			R7	CR=48% RQD=NIL
7.75m.				7.75
			R8	CR=50% RQD=30%
				8.50
Moderately weathered, yellowish brown, fine to medium grained, highly to moderately fractured sandstone.			R9	CR=56% RQD=16%
				9.25
			R10	CR=45% RQD=17%
				10.00
			R11	CR=48% RQD=22%
10.50m.				

BH-3/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 22/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 3

Co-ordinates E=1510 N=4270

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 19/08/17
Completion Date : 20/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.643 m.
Water Struck At :
Standing Water Level : 1.10 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
				10.75
			R12 CR=57% RQD=40%	11.50
			R13 CR=62% RQD=20%	12.25
Moderately weathered, yellowish brown, fine to medium grained, highly to moderately fractured sandstone.			R14 CR=46% RQD=16%	13.00
			R15 CR=49% RQD=18%	13.75
			R16 CR=48% RQD=22%	14.50
10.50m.				
			R17 CR=69% RQD=20%	15.25
			R18 CR=64% RQD=NIL	16.00
			R19 CR=79% RQD=48%	16.75
Slightly weathered, brownish grey, medium grained, moderately fractured sandstone.			R20 CR=62% RQD=36%	17.50
			R21 CR=64% RQD=23%	18.25
			R22 CR=76% RQD=33%	19.00
			R23 CR=78% RQD=38%	20.00
14.50m.				
20.00m.				

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975	Created by : Chandrani	Created on : 17/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 4

Co-ordinates E=1607 N=4245

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	3	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	3
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 04/08/17
Completion Date : 06/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.719 m.
Water Struck At :
Standing Water Level : 1.30 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Dense, yellowish brown, silty sand / sandy silt. (SM)		4 16 24 — 40	DS-1	0.50
			UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
3.00m				
Very dense, yellowish grey, clayey silty sand with decomposed rock. (SM)		45 56 — 7.0 cm Pentn. >100 Refusal	SPT-2	3.00-3.22
4.00m		100 — 2.0 cm Pentn. Refusal	*SPT-3	4.00-4.02
Slightly weathered / fresh, greyish yellow, medium to fine grained, fractured sandstone.		NX rotary drilling from 4.00m to 17.50m	R1	CR=68% RQD=23% (4.00-4.75)
			R2	CR=68% RQD=15% (4.75-5.50)
			R3	CR=79% RQD=31% (5.50-6.25)
			R4	CR=92% RQD=NIL (6.25-7.00)
			R5	CR=75% RQD=40% (7.00-7.75)
			R6	CR=91% RQD=24% (7.75-8.50)
			R7	CR=79% RQD=15% (8.50-9.25)
			R8	CR=73% RQD=15% (9.25-10.00)
10.00m				
			R9	CR=87% RQD=37% (10.00-10.75)
			R10	CR=88% RQD=17% (10.75-11.50)
			R11	CR=83% RQD=15% (11.50-13.00)
Fresh, deep grey, medium to fine grained, fractured sandstone.			R12	CR=84% RQD=24% (13.00-14.50)
			R13	CR=83% RQD=29% (14.50-16.00)
			R14	CR=82% RQD=33% (16.00-17.50)
17.50m				

N.B. - '*' means sample could not be recovered.

BH-4/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 18/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 5

Co-ordinates E=1210 N=4230

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	3	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	3
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 02/08/17
Completion Date : 02/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 72.492 m.
Water Struck At :
Standing Water Level : 1.55 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of yellowish grey, silty medium to coarse grained sand. Obs. boulders.			DS-1	0.50
			*UDS-1	1.00-1.30
1.50m.		>100		
Very dense, yellowish grey, silty medium grained sand. Obs. decomposed rock. (SM)		23 46 21 5.0 cm Penetn. Refusal	SPT-1	1.50-1.85
		102 4.0 cm Penetn.	*SPT-2	2.20-2.24
2.50m.		106 Refusal 4.0 cm Penetn.	*SPT-3	2.50-2.54
Moderately to slightly weathered, brownish grey, fine grained, fractured sandstone.		NX rotary drilling from 2.50m to 10.00m	R1	CR=53% RQD=19%
			R2	CR=64% RQD=51%
4.00m.			R3	CR=93% RQD=90%
			R4	CR=92% RQD=84%
			R5	CR=87% RQD=19%
Fresh, brownish grey to grey, fine grained, fractured sandstone.			R6	CR=85% RQD=77%
			R7	CR=98% RQD=78%
10.00m.				

2.50 → 3.25 → 4.00 → 4.75 → 5.50 → 7.00 → 8.50 → 10.00

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 28/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 6

Co-ordinates E=1218 N=3946

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	3	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	3
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 14/08/17
Completion Date : 17/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.242 m.
Water Struck At :
Standing Water Level : 1.9 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of yellowish grey, silty sand with gravels & boulders.			DS-1	0.50
			DS-2	1.00
1.60m. Hard, light grey, silty clay. Obs. decomposed rock. (Cl)		≥100 (16 51 33) 5.0 cm Pentn.	*UDS-1	2.00-2.20
			SPT-1	2.30-2.65
3.00m. Very dense, yellowish grey, silty sand with decomposed rock. (SM)		≥100 (100) 3.0 cm Pentn.	DS-3	3.00
			*SPT-2	3.60-3.63
3.70m.		Refusal (100) 2.0 cm Pentn.	*SPT-3	3.70-3.72
Moderately to slightly weathered, yellowish grey, medium grained, fractured rock.		NX rotary drilling from 3.70m to 20.00m	R1 CR=58% RQD=19%	3.70 - 4.40
			R2 CR=56% RQD=NIL	4.40 - 5.15
			R3 CR=55% RQD=24%	5.15 - 5.90
			R4 CR=76% RQD=40%	5.90 - 6.65
			R5 CR=72% RQD=NIL	6.65 - 7.40
7.40m.			R6 CR=60% RQD=NIL	7.40 - 8.15
			R7 CR=72% RQD=46%	8.15 - 8.90
			R8 CR=56% RQD=NIL	8.90 - 9.65
			R9 CR=72% RQD=14%	9.65 - 10.40
			R10 CR=68% RQD=24%	10.40 - 11.15
			R11 CR=72% RQD=20%	11.15 - 11.90
			R12 CR=76% RQD=14%	11.90 - 12.65
			R13 CR=72% RQD=NIL	12.65 - 13.40
Slightly weathered / fresh, grey, medium grained, fractured sandstone.			R14 CR=68% RQD=24%	13.40 - 14.15
			R15 CR=77% RQD=22%	14.15 - 14.90
			R16 CR=68% RQD=20%	14.90 - 15.65
			R17 CR=72% RQD=40%	15.65 - 16.40
			R18 CR=74% RQD=20%	16.40 - 17.15
			R19 CR=76% RQD=56%	17.15 - 17.90
			R20 CR=81% RQD=22%	17.90 - 18.65
			R21 CR=84% RQD=72%	18.65 - 19.40
N.B. - '*' means sample could not be recovered. 20.00m.			R22 CR=80% RQD=35%	19.40 - 20.00

BH-6/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 17/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 7

Co-ordinates E=1140 N=4009

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 11/08/17
Completion Date : 12/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.120 m.
Water Struck At :
Standing Water Level : 0.95 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m Brownish grey, silty sand. Obs. boulders. (SM)			DS-1	0.50
			*UDS-1	1.00-1.45
1.50m Stiff to very stiff, brownish grey, silty clay. Obs. kankars. (Cl)		9 13 14 (27) 4 6 8 (14)	SPT-1 SPT-2	1.60-2.05 3.00-3.45
			DS-2	2.50
3.70m Very dense, brownish grey, silty sand with decomposed rock. (SM)		48 52 (≥100) 10.0 cm Penetn. 100 4.0 cm (≥100) Penetn.	SPT-3 *SPT-4	4.00-4.25 4.40-4.44
4.70m Highly weathered, brownish grey, medium to fine grained fractured sandstone.		100 Refusal 4.0 cm Penetn.	*SPT-5 R1	4.70-4.74 CR=28% RQD=NIL
5.25m			R2	CR=65% RQD=44%
		NX rotary drilling from 4.70m to 15.00m	R3	CR=76% RQD=48%
Slightly weathered, brownish grey to deep grey, medium to fine grained fractured sandstone.			R4	CR=71% RQD=22%
			R5	CR=68% RQD=NIL
8.25m			R6	CR=84% RQD=74%
			R7	CR=81% RQD=52%
			R8	CR=88% RQD=21%
Fresh, deep grey, fine grained, fractured rock			R9	CR=87% RQD=72%
			R10	CR=86% RQD=23%
			R11	CR=81% RQD=64%
15.00m				

4.70 5.25 6.00 6.75 7.50 8.25 9.00 9.75 11.00 12.50 14.00 15.00

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 17/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 8

Co-ordinates E=1110 N=3920

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 09/08/17
Completion Date : 11/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.142 m.
Water Struck At :
Standing Water Level : 1.80 m

DESCRIPTION	N-VALUE (EACH DIVN. = 15cm.)	Ref. No	Depth (m)
0.00m			
Medium dense, brownish grey, silty medium sand. Obs. kankars & traces of clay binders. (SM)	8 11 12 (23)	DS-1	0.50
		*UDS-1	1.00-1.45
		SPT-1	1.45-1.90
2.00m		DS-2	2.50
Very dense, yellowish grey, silty fine to medium grained sand. Obs. decomposed rock. (SM)	28 32 40 (>100) 9.0 cm Penetn.	SPT-2	2.80-3.19
	100 Refusal 4.0 cm Penetn.	*SPT-3	3.50-3.54
3.80m	100 Refusal 3.0 cm Penetn.	*SPT-4	3.80-3.83
	NX rotary drilling from 3.80m to 15.00m	R1	CR=42% RQD=NIL (3.80 - 4.50)
Moderately to slightly weathered, yellowish grey, medium to fine grained, fractured sandstone.		R2	CR=52% RQD=NIL (4.50 - 5.25)
		R3	CR=64% RQD=NIL (5.25 - 6.00)
		R4	CR=70% RQD=NIL (6.00 - 6.75)
		R5	CR=69% RQD=NIL (6.75 - 7.50)
		R6	CR=68% RQD=NIL (7.50 - 8.25)
8.25m		R7	CR=80% RQD=76% (8.25 - 9.00)
		R8	CR=92% RQD=22% (9.00 - 9.75)
		R9	CR=88% RQD=80% (9.75 - 11.00)
Fresh, grey to deep grey, medium to fine grained, fractured sandstone.		R10	CR=83% RQD=70% (11.00 - 12.50)
		R11	CR=84% RQD=20% (12.50 - 14.00)
		R12	CR=85% RQD=72% (14.00 - 15.00)
15.00m			

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 9

Co-ordinates E=1100 N=3826

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	3	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	3
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 22/07/17
Completion Date : 24/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.497 m.
Water Struck At :
Standing Water Level : 1.52 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Grey, Silty sand. Obs. gravels. (SM)				
0.40m			DS-1	0.50
Medium, yellowish grey, silty clay with sand mixture & kankars. (Cl)		8	UDS-1	0.70-1.05
1.05m		3 4 4	SPT-1	1.05-1.50
Loose, yellowish grey, silty sand / sandy silt. Obs. kankars. (SM)			DS-2	2.00
2.50m		Refusal	SPT-2	2.50-2.56
Very dense, yellowish grey, silty sand with decomposed rock. (SM)		100. 6.0 cm Penth.	*SPT-3	2.70-2.72
2.70m		100 Refusal 2.0 cm Penth.		2.70
			R1	CR=29% RQD=NIL
				3.40
			R2	CR=27% RQD=NIL
				4.15
			R3	CR=29% RQD=NIL
				4.90
			R4	CR=24% RQD=14%
				5.65
Highly weathered, yellowish grey, medium grained, highly fractured sandstone.		NX rotary drilling from 2.70m to 15.00m	R5	CR=28% RQD=NIL
				6.40
			R6	CR=27% RQD=NIL
				7.15
			R7	CR=27% RQD=NIL
				7.90
			R8	CR=21% RQD=NIL
				8.45
			R9	CR=35% RQD=NIL
9.20m				9.20
			R10	CR=84% RQD=NIL
				9.95
			R11	CR=88% RQD=NIL
				10.70
			R12	CR=82% RQD=24%
Fresh, deep grey, medium grained, fractured sandstone.				12.20
			R13	CR=80% RQD=29%
				13.70
			R14	CR=81% RQD=66%
15.00m				15.00

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 10

Co-ordinates E=1044 N=3785

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	3	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	3
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 20/07/17
Completion Date : 22/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.425 m.
Water Struck At :
Standing Water Level : 1.40 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Loose, yellowish grey, silty sand. Obs. kankars. (SM)		2 3 5 — 8	*UDS-1	0.50-0.95
			DS-1	1.25
			SPT-1	1.50-1.95
2.50m		100 — Refusal 6.0 cm Pentn.	*SPT-2	2.50-2.56
Very dense, yellowish grey, silty sand with kankars. Obs. decomposed rock dust. (SM)		100 — Refusal 3.0 cm Pentn.	*SPT-3	2.80-2.83
2.80m				2.80
Highly weathered, yellowish grey, medium grained, fractured sandstone.			R1	CR=37% RQD=21%
3.50m				3.50
			R2	CR=56% RQD=24%
				4.25
			R3	CR=52% RQD=NIL
Moderately weathered, yellowish grey, medium grained, fractured sandstone.		NX rotary drilling from 2.80m to 14.00m		5.00
			R4	CR=57% RQD=NIL
5.75m				5.75
			R5	CR=73% RQD=62%
				6.50
			R6	CR=81% RQD=NIL
				7.25
			R7	CR=83% RQD=34%
				8.00
			R8	CR=89% RQD=80%
				9.50
Slightly weathered / fresh, grey, fine to medium grained, slightly fractured sandstone.			R9	CR=92% RQD=84%
				11.00
			R10	CR=82% RQD=74%
				12.50
			R11	CR=84% RQD=80%
14.00m				14.00

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 11

Co-ordinates E=1137 N=3769

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	3	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	3
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 17/07/17
Completion Date : 20/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 69.845 m.
Water Struck At :
Standing Water Level : 0.40 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Soft, brownish grey, silty clay / clayey silt with kankars & sand mixture. (Cl)		3 (1 1 2)	DS-1	0.50
			*UDS-1	1.00-1.45
			SPT-1	1.60-2.05
2.20m.		Refusal	*SPT-2	2.20-2.25
Very dense, yellowish grey, silty sand with decomposed rock. (SM) 2.40m.		100 5.0 cm Penth.	*SPT-3	2.40-2.44
		100 Refusal 4.0 cm Penth.		2.40
			R1	CR=70% RQD=58%
Moderately weathered, yellowish grey, medium grained, fractured sandstone.				3.00
			R2	CR=45% RQD=41%
				3.75
			R3	CR=52% RQD=17%
4.50m.		NX rotary drilling from 2.40m to 13.50m		4.50
			R4	CR=77% RQD=72%
				5.25
			R5	CR=75% RQD=19%
				6.00
			R6	CR=76% RQD=73%
				6.75
			R7	CR=80% RQD=58%
				7.50
			R8	CR=87% RQD=20%
				8.25
Slightly weathered / fresh, light grey, medium grained, fractured sandstone.			R9	CR=94% RQD=88%
				9.75
			R10	CR=86% RQD=23%
				10.50
			R11	CR=80% RQD=62%
				12.00
			R12	CR=85% RQD=76%
13.50m.				13.50

N.B. - '*' means sample could not be recovered.

BH-11/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | **Created by : Chandrani** | **Created on : 17/08/2017** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO. 12

Co-ordinates E=1155 N=3672

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 04/08/17
Completion Date : 07/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 69.812 m.
Water Struck At :
Standing Water Level : 2.20 m.

DESCRIPTION	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of kankars, boulders. 0.40m.		DS-1	0.50
Stiff to very stiff, light grey, silty clay with traces of sand mixture. (Cl)	4 4 5 (9)	UDS-1	1.00-1.45
		SPT-1	1.45-1.90
		DS-2	2.50
	5 7 11 (18)	SPT-2	3.00-3.45
		UDS-2	4.00-4.45
4.50m. Very dense, yellowish brown, silty sand with decomposed rock. (SM)	28 32 40 (>100) 5.0 cm Pentn.	SPT-4	4.45-4.80
5.00m.	100 Refusal 3.0 cm Pentn.	*SPT-4	5.00-5.03
Highly weathered, yellowish brown, medium to fine grained fractured sandstone. 5.75m.	NX rotary drilling from 5.00m to 20.00m	R1	CR=25% RQD=NIL
		R2	CR=56% RQD=NIL
		R3	CR=82% RQD=16%
		R4	CR=78% RQD=NIL
		R5	CR=89% RQD=24%
		R6	CR=68% RQD=24%
		R7	CR=84% RQD=22%
		R8	CR=76% RQD=33%
		R9	CR=90% RQD=18%
		R10	CR=77% RQD=52%
Slightly weathered / fresh, light grey, fine grained, fractured sandstone.		R11	CR=91% RQD=24%
		R12	CR=96% RQD=NIL
		R13	CR=83% RQD=38%
		R14	CR=89% RQD=18%
		R15	CR=88% RQD=61%
		R16	CR=99% RQD=95%
20.00m.			

5.00 5.75 6.50 7.25 8.00 8.75 9.50 10.25 11.00 11.75 12.50 13.25 14.00 15.50 17.00 18.50 20.00

N.B. – '*' means sample could not be recovered.

BH-12/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 17/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 13

Co-ordinates E=1290 N=3713

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
		Disturbed (DS)	2
Vane (V)		Water Sample (WS)	0

Commencement Date : 30/07/17
Completion Date : 31/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 68.955 m.
Water Struck At :
Standing Water Level : 1.40 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Stiff, deep grey, silty clay. Obs. kankars. (Cl)		5 7 7 (14)	DS-1	0.50
			UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
3.00m.			*UDS-2	3.00-3.10
		9 16 26 (42)	SPT-2	3.10-3.55
Dense to very dense, silty fine to medium grained sand with decomposed rock. (SM)		24 52 24 (>100) 9.0 cm Penetn.	SPT-3	4.10-4.49
		100 Refusal 4.0 cm Penetn.	*SPT-4	4.60-4.64
4.75m.		100 Refusal 3.0 cm Penetn.	*SPT-5	4.75-4.78
Moderately to slightly weathered, brownish grey to grey, medium to fine grained, fractured sandstone.		NX rotary drilling from 4.75m to 13.50m	R1	CR=48% RQD=17%
			R2	CR=67% RQD=20%
			R3	CR=80% RQD=64%
			R4	CR=77% RQD=20%
7.75m.			R5	CR=82% RQD=32%
			R6	CR=80% RQD=20%
			R7	CR=90% RQD=22%
Fresh, grey, fine grained, fractured sandstone.			R8	CR=93% RQD=87%
			R9	CR=97% RQD=93%
13.50m.				

4.75
5.50
6.25
7.00
7.75
8.50
9.25
10.50
12.00
13.50

N.B. - '*' means sample could not be recovered.

BH-13/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 14

Co-ordinates E=1143 N=3758

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 25/07/17
Completion Date : 26/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 68.122 m.
Water Struck At :
Standing Water Level : 1.30 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m Yellowish brown, silty clay with sand mixture. (Cl)			DS-1	0.50
			UDS-1	1.00-1.45
1.45m		2 2 4 (6)	SPT-1	1.45-1.90
Medium, yellowish grey, silty clay. (Cl)			DS-2	2.50
		3 4 4 (8)	SPT-2	3.00-3.45
4.00m			DS-3	4.00
Very dense, yellowish grey, silty sand with decomposed rock. (SM)		64 40 (>100) 5.0 cm Pentn.	SPT-3	4.50-4.70
5.00m		100 Refusal 3.0 cm Pentn.	*SPT-4	5.00-5.03
Moderately to slightly weathered, yellowish grey, medium grained, fractured sandstone.			R1	CR=57% RQD=17% 5.00-5.75
			R2	CR=80% RQD=16% 5.75-6.50
6.50m		NX rotary drilling from 5.00m to 13.00m	R3	CR=79% RQD=20% 6.50-7.25
			R4	CR=75% RQD=NIL 7.25-8.00
			R5	CR=89% RQD=24% 8.00-8.75
			R6	CR=87% RQD=21% 8.75-9.50
Slightly weathered / fresh, grey, medium grained, fractured sandstone.			R7	CR=85% RQD=16% 9.50-11.00
			R8	CR=83% RQD=38% 11.00-12.50
			R9	CR=90% RQD=76% 12.50-13.00
13.00m				

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 15

Co-ordinates E=1523 N=3681

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 26/07/17
Completion Date : 28/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 67.092 m.
Water Struck At :
Standing Water Level : 1.20 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Medium to stiff, yellowish brown, silty clay / clayey silt with sand mixture. (Cl)		2 4 4 (8)	DS-1	0.50
			UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
		2 4 7 (11)	SPT-2	3.00-3.45
4.00m.				
Very dense, yellowish grey, clayey silty sand with decomposed rock. (SM)		70 5.0 cm Pentn. (>100)	SPT-3	4.20-4.25
4.30m.		100 Refusal 2.0 cm Pentn.	*SPT-4	4.30-4.32
Moderately weathered, greyish yellow, medium grained, fractured sandstone.			R1	CR=53% RQD=NIL
5.00m.				5.00
			R2	CR=69% RQD=20%
Slightly weathered, yellowish grey, medium grained, fractured sandstone.				5.75
			R3	CR=72% RQD=NIL
6.50m.		NX rotary drilling from 4.30m to 12.50m		6.50
			R4	CR=81% RQD=17%
				7.25
			R5	CR=84% RQD=19%
				8.00
			R6	CR=80% RQD=24%
				9.50
Fresh, grey, medium grained, fractured sandstone.			R7	CR=84% RQD=35%
				11.00
			R8	CR=86% RQD=47%
12.50m.				12.50

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 16

Co-ordinates E=1064 N=3629

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	4
		Water Sample (WS)	0

Commencement Date : 22/07/17
Completion Date : 25/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.314 m.
Water Struck At :
Standing Water Level : 2.50 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of brownish grey, silty sand. 0.70m.			DS-1	0.50
Hard, deep grey, silty clay. Obs. calcareous nodules. (CI)		10 14 17 — 31	UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
		11 19 21 — 40	SPT-2	3.00-3.45
			DS-3	3.80
4.00m. Hard, yellowish grey, silty clay. Obs. sand mixture. (CI)		17 20 24 — 44	UDS-2	4.10-4.55
			SPT-3	4.55-5.00
		≥100	DS-4	5.40
6.00m. Very dense, yellowish grey, silty sand with decomposed rock. (SM) 6.50m.		61 100 — 2.0 cm Penetn. 100 Refusal 3.0 cm Penetn.	SPT-4	5.80-5.97
			*SPT-5	6.50-6.53
Moderately to slightly weathered, yellowish brown, medium grained, fractured sandstone.		NX rotary drilling from 6.50m to 20.00m	R1	CR=58%/RQD=NIL
			R2	CR=64% RQD=NIL
			R3	CR=68% RQD=21%
			R4	CR=72% RQD=20%
			R5	CR=76% RQD=32%
			R6	CR=72% RQD=16%
			R7	CR=70% RQD=NIL
			R8	CR=80% RQD=NIL
			R9	CR=76% RQD=NIL
13.00m. Slightly weathered, grey, medium to fine grained, fractured sandstone.			R10	CR=72% RQD=NIL
			R11	CR=80% RQD=32%
			R12	CR=78% RQD=28%
			R13	CR=72% RQD=16%
			R14	CR=80% RQD=NIL
			R15	CR=76% RQD=NIL
			R16	CR=72% RQD=NIL
			R17	CR=78% RQD=NIL
			R18	CR=76% RQD=NIL
20.00m. N.B. - '*' means sample could not be recovered.				

6.50 7.00 7.75 8.50 9.25 10.00 10.75 11.50 12.25 13.00 13.75 14.50 15.25 16.00 16.75 17.50 18.25 19.00 20.00

BH-16/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET — BORE HOLE NO. 17

Co-ordinates E=1122 N=3606

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	7	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	7
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 26/07/17
Completion Date : 27/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.782 m.
Water Struck At :
Standing Water Level : 2.40 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
			DS-1	0.50
		20	UDS-1	1.00-1.45
		6 9 11	SPT-1	1.45-1.90
			DS-2	2.50
		19		
Very stiff, grey, silty clay. Obs. kankars. (Cl)		6 9 10	SPT-2	3.00-3.45
		26	UDS-2	4.00-4.45
		6 11 15	SPT-3	4.45-4.90
			DS-3	5.50
		28		
		8 12 16	SPT-4	6.00-6.45
6.80m		≥100		
		100 12.0 cm Pentn. Refusal	SPT-5	6.80-6.92
Very dense, brownish grey, silty fine sand with decomposed rock. (SM)		100 4.0 cm Pentn. Refusal	*SPT-6	7.20-7.24
7.40m		100 4.0 cm Pentn.	*SPT-7	7.40-7.44
		NX rotary drilling from 7.40m to 20.00m	R1	CR=56% RQD=18% 7.40 - 8.00
			R2	CR=57% RQD=NIL 8.00 - 8.75
			R3	CR=78% RQD=NIL 8.75 - 9.50
Moderately to slightly weathered, brownish grey to deep grey, fine to medium grained, highly fractured sandstone.			R4	CR=76% RQD=NIL 9.50 - 10.25
			R5	CR=79% RQD=NIL 10.25 - 11.00
			R6	CR=78% RQD=16% 11.00 - 11.75
			R7	CR=77% RQD=NIL 11.75 - 12.50
12.50m			R8	CR=80% RQD=16% 12.50 - 13.25
			R9	CR=85% RQD=16% 13.25 - 14.00
			R10	CR=81% RQD=29% 14.00 - 15.50
Slightly weathered / fresh, alternative deep grey to light grey, fine to medium grained, highly fractured sandstone.			R11	CR=80% RQD=19% 15.50 - 17.00
			R12	CR=81% RQD=NIL 17.00 - 18.50
			R13	CR=77% RQD=14% 18.50 - 20.00
N.B. - '*' means sample could not be recovered. 20.00m				

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 18

Co-ordinates E=1086 N=3556

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	6	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	6
Vane (V)		Disturbed (DS)	5
		Water Sample (WS)	0

Commencement Date : 17/07/17
Completion Date : 22/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.128 m.
Water Struck At :
Standing Water Level : 2.75 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Filled up soil consists of light grey, fly ash. 0.50m			DS-1	0.50
		11 13 14 = 27	UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
Very stiff to hard, yellowish grey, silty clay / clayey silt with sand mixture. Obs. calcareous nodules. (Cl)		12 17 19 = 36	SPT-2	3.00-3.45
			DS-3	3.80
			UDS-2	4.20-4.65
		11 19 24 = 43	SPT-3	4.65-5.10
5.20m				
			DS-4	5.50
Hard, yellowish grey, silty clay. Obs. sand mixture. (Cl)		18 28 38 = 66	SPT-4	6.00-6.45
7.00m			DS-5	7.00
Very dense, yellowish grey, silty sand witih decomposed rock. (SM) 7.50m		100 10.0 cm Pentn. = >100	SPT-5	7.20-7.30
		100 Refusal 3.0 cm Penth.	*SPT-6	7.50-7.53
			R1	CR=78% RQD=23% 7.50-8.25
			R2	CR=75% RQD=29% 8.25-9.00
Slightly weathered, yellowish grey, medium grained, fractured sandstone.			R3	CR=64% RQD=NIL 9.00-9.75
			R4	CR=68% RQD=24% 9.75-10.50
		NX rotary drilling from 7.50m to 16.50m	R5	CR=72% RQD=20% 10.50-11.25
11.50m			R6	CR=76% RQD=16% 11.25-12.00
			R7	CR=72% RQD=58% 12.00-12.75
			R8	CR=74% RQD=22% 12.75-13.50
Slightly weathered / fresh, grey, medium to fine grained, fractured sandstone.			R9	CR=80% RQD=40% 13.50-14.25
			R10	CR=84% RQD=40% 14.25-15.00
			R11	CR=82% RQD=40% 15.00-16.50
16.50m				

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 12/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 19

Co-ordinates E=1319 N=3415

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 19/08/17
Completion Date : 20/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 67.452 m.
Water Struck At :
Standing Water Level : 2.20 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of brownish grey, silty clay followed by ash from 0.80m.		2 3 4 (7)	DS-1	0.50
			*UDS-1	1.00-1.45
			SPT-1	1.55-2.00
2.50m.			DS-2	2.50
Stiff, greyish yellow, silty clay with sand mixture. (Cl)		2 4 4 (8)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		4 6 7 (13)	SPT-3	4.45-4.90
			DS-3	5.50
5.80m.				
Very dense, yellowish brown, silty sand with decomposed rock. (SM)		100 8.0 cm Penth. (>100)	SPT-4	6.00-6.08
6.20m.		100 2.0 cm Penth. Refusal	*SPT-5	6.20-6.22
Highly to moderately weathered, yellowish brown, medium to fine grained, fractured sandstone.		NX rotary drilling from 6.20m to 15.00m	R1	CR=40% RQD=23% (6.20-7.00)
			R2	CR=53% RQD=17% (7.00-7.75)
			R3	CR=59% RQD=NIL (7.75-8.50)
			R4	CR=45% RQD=17% (8.50-9.25)
9.25m.			R5	CR=64% RQD=16% (9.25-10.00)
Slightly weathered / fresh, light grey, medium to fine grained, moderately fractured sandstone.			R6	CR=67% RQD=15% (10.00-10.75)
			R7	CR=68% RQD=40% (10.75-11.50)
			R8	CR=72% RQD=24% (11.50-12.25)
			R9	CR=85% RQD=48% (12.25-13.00)
			R10	CR=83% RQD=32% (13.00-13.15)
			R11	CR=84% RQD=53% (13.15-15.00)
15.00m.				

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | Created by : Chandrani | Created on : 03/08/2017 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 20

Co-ordinates E=1399 N=3412

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	7	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	7
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 21/07/17
Completion Date : 23/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 68.317 m.
Water Struck At :
Standing Water Level : 3.40 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of brownish grey, silty clay with ash.			DS-1	0.50
1.00m. Filled up soil consists of brownish grey, silty sand / sandy silt.			UDS-1	1.00-1.45
		3 3 4 (7)	SPT-1	2.00-2.45
2.60m. Medium to stiff, deep grey, silty clay with sand mixture. Obs. kankars. (Cl)			DS-2	3.00
		3 4 4 (8)	SPT-2	3.50-3.95
			UDS-2	4.10-4.55
		3 4 5 (9)	SPT-3	4.55-5.00
5.10m. Very dense, grey, silty sand, decomposed rock. Obs. traces of clay. (SM)		20 41 53 (>100) 8.0 cm Pentn.	SPT-4	5.40-5.78
			DS-3	6.00
		46 61 (>100) 5.0 cm Pentn.	SPT-5	6.30-6.50
		104 Refusal 4.0 cm Pentn.	*SPT-6	6.90-6.94
7.20m. Highly to moderately weathered, grey, medium grained, fractured sandstone.		101 Refusal 4.0 cm Pentn.	*SPT-7	7.20-7.24
		NX rotary drilling from 7.20m to 15.00m	R1	CR=47% RQD=30% (7.20 - 8.00)
			R2	CR=44% RQD=20% (8.00 - 8.75)
			R3	CR=56% RQD=15% (8.75 - 9.50)
			R4	CR=47% RQD=NIL (9.50 - 10.25)
			R5	CR=28% RQD=NIL (10.25 - 11.00)
			R6	CR=27% RQD=NIL (11.00 - 11.75)
			R7	CR=29% RQD=NIL (11.75 - 12.50)
			R8	CR=33% RQD=NIL (12.50 - 13.25)
			R9	CR=32% RQD=NIL (13.25 - 14.00)
			R10	CR=36% RQD=NIL (14.00 - 15.00)
15.00m.				

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 03/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 21

Co-ordinates E=1299 N=3336

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
		Disturbed (DS)	3
Vane (V)		Water Sample (WS)	1

Commencement Date : 17/07/17
Completion Date : 20/07/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 67.346 m.
Water Struck At :
Standing Water Level : 2.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of brownish grey, silty clay followed by ash from 0.60m to 2.40m.		3 3 3 — 6	DS-1	0.50
			*UDS-1	1.00-1.45
			SPT-1	1.60-2.05
			WS-1	2.45
			DS-2	2.50
2.40m.				
Stiff, grey, silty clay with sand mixture. (Cl)		3 4 6 — 10	UDS-2	3.00-3.45
			SPT-2	3.45-3.90
4.30m.				
Very dense, grey, silty sand with decomposed rock. (SM)		16 29 64 — >100	DS-3	4.50
		5.0 cm Pentn. Refusal	SPT-3	5.00-5.35
		53 — 4.0 cm Pentn. Refusal	*SPT-4	5.60-5.64
5.80m.		51 — 4.0 cm Pentn.	*SPT-5	5.80-5.84
		NX rotary drilling from 5.80m to 10.00m	R1	CR=40% RQD=31% (5.80 - 6.50)
			R2	CR=58% RQD=47% (6.50 - 7.25)
Highly to moderately weathered, yellowish grey to grey, fine grained fractured sandstone.			R3	CR=42% RQD=24% (7.25 - 8.00)
			R4	CR=25% RQD=NIL (8.00 - 8.75)
			R5	CR=28% RQD=NIL (8.75 - 9.50)
			R6	CR=38% RQD=NIL (9.50 - 10.00)
10.00m.				

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 08/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 22

Co-ordinates E=1024 N=4670

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	7	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	7
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 24/08/17
Completion Date : 25/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 74.312 m.
Water Struck At :
Standing Water Level : 4.50 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
			DS-1	0.50
			*UDS-1	1.00-1.10
		4 7 22 (29)	SPT-1	1.25-1.70
Filled up soil consists of silty clay with boulders & ash.				
			DS-2	2.50
		5 7 9 (16)	SPT-2	3.00-3.45
4.00m				
			UDS-2	4.00-4.45
		4 6 8 (14)	SPT-3	4.45-4.90
Stiff to very stiff, light grey, silty clay. Obs. kankars. (Cl)				
			DS-3	5.50
		5 7 9 (16)	SPT-4	6.00-6.45
7.00m				
		20 36 48 (84)	*UDS-3	7.00-7.10
Very dense, grey, silty fine grained sand with decomposed rock. (SM)			SPT-5	7.10-7.55
		100 Refusal 4.0 cm Pentn.	*SPT-6	7.80-7.84
8.10m		100 Refusal 4.0 cm Pentn.	*SPT-7	8.10-8.14
			R1	CR=48% RQD=17% (8.10 - 8.75)
Moderately to slightly weathered, deep grey, fine grained, fractured sandstone.		NX rotary drilling from 8.10m to 10.00m	R2	CR=69% RQD=31% (8.75 - 9.50)
			R3	CR=74% RQD=41% (9.50 - 10.00)
10.00m				

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | **Created by : Chandrani** | **Created on : 29/08/2017** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO. 23

Co-ordinates E=855 N=4610

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	6	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	6
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 20/08/17
Completion Date : 20/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 72.812 m.
Water Struck At :
Standing Water Level : 1.20 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of silty clay with road materials.				
0.80m.			DS-1	0.50
		9 (3 4 5)	UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
		11 (4 5 6)	SPT-2	3.00-3.45
Stiff, grey, silty clay. Obs. kankars. (Cl)			UDS-2	4.00-4.45
		14 (5 6 8)	SPT-3	4.45-4.90
			DS-3	5.50
6.00m.		17 (7 8 9)	SPT-4	6.00-6.45
Very stiff, grey, silty clay. Obs. kankars. (Cl)				
6.80m.			SPT-5	7.00-7.10
Very dense, brownish grey, silty medium grained sand with decomposed rock. (SM)		100 10.0 cm Pentn. >100	*SPT-6	7.30-7.34
7.30m.		100 4.0 cm Pentn. >100	R1	CR=62% RQD=16% 7.30-8.00
		NX rotary drilling from 7.30m to 15.00m	R2	CR=61% RQD=52% 8.00-8.75
			R3	CR=71% RQD=54% 8.75-9.50
			R4	CR=76% RQD=17% 9.50-10.25
			R5	CR=79% RQD=72% 10.25-11.00
Slightly weathered / fresh, brownish grey to grey, medium to fine grained, fractured sandstone.			R6	CR=88% RQD=60% 11.00-11.75
			R7	CR=82% RQD=75% 11.75-12.50
			R8	CR=84% RQD=22% 12.50-13.25
			R9	CR=82% RQD=42% 13.25-14.00
			R10	CR=86% RQD=70% 14.00-15.00
15.00m.				

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975	Created by : Chandrani	Created on : 08/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 24

Co-ordinates E=867 N=4703

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 22/08/17
Completion Date : 23/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 73.124 m.
Water Struck At :
Standing Water Level : 2.30 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of grey to brownish grey, silty clay with boulder & coal dust.		2 3 4 (7)	DS-1	0.50
			*UDS-1	1.00-1.45
			SPT-1	1.60-2.05
2.20m.			DS-2	2.50
Stiff, light grey, silty clay. Obs. kankars. (Cl)		3 5 5 (10)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		4 5 7 (12)	SPT-3	4.45-4.90
			DS-3	5.50
5.90m.				
Very dense, brownish grey, silty fine sand with decomposed rock. (SM)		42 58 (>100) 7.0 cm Penth.	SPT-4	6.00-6.22
6.40m.		100 Refusal 4.0 cm Penth.	*SPT-5	6.40-6.44
Highly to moderately weathered, brownish grey, fine grained, fractured sandstone.		NX rotary drilling from 6.40m to 15.00m	R1	CR=33% RQD=NIL (6.40-7.00)
			R2	CR=49% RQD=NIL (7.00-7.75)
			R3	CR=48% RQD=15% (7.75-8.50)
8.50m.			R4	CR=64% RQD=28% (8.50-9.25)
Slightly weathered / fresh, grey to blackish grey, fine grained, fractured sandstone.			R5	CR=45% RQD=27% (9.25-10.00)
			R6	CR=61% RQD=NIL (10.00-10.75)
			R7	CR=63% RQD=21% (10.75-11.50)
			R8	CR=68% RQD=NIL (11.50-12.25)
			R9	CR=71% RQD=NIL (12.25-13.00)
			R10	CR=92% RQD=76% (13.00-13.75)
			R11	CR=82% RQD=20% (13.75-14.50)
15.00m.			R12	CR=83% RQD=47% (14.50-15.00)

N.B. - '*' means sample could not be recovered.

BH-24/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975	Created by : Chandrani	Created on : 17/08/2017	Sheet No:

BORE LOG DATA SHEET — BORE HOLE NO. 25

Co-ordinates E=783 N=4670

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	7	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	7
Vane (V)		Disturbed (DS)	4
		Water Sample (WS)	0

Commencement Date : 07/08/17
Completion Date : 09/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.552 m.
Water Struck At :
Standing Water Level : 1.70 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of deep grey to brownish grey, silty sand. Obs. kankars.			DS-1	0.50
0.80m. Stiff, grey, silty clay. (Cl)		3 5 6 (11)	UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
		5 7 8 (15)	SPT-2	3.00-3.45
4.00m. Very dense, brownish grey, silty medium to fine grained sand & decomposed rock. (SM)		>100	*UDS-2	4.00-4.10
		42 58 12.0 cm Penth.	SPT-3	4.10-4.37
		100 Refusal 4.0 cm Penth.	*SPT-4	4.60-4.64
4.90m. Completely weathered, yellowish grey, fine grained rock fragment collected as sludge.		100 Refusal 3.0 cm Penth.	*SPT-5	4.90-4.93
			R1	CR=NIL RQD=NIL
			DS-3	4.90
		50 Refusal 3.0 cm Penth.	*SPT-6	5.50-5.53
			R2	CR=NIL RQD=NIL
		Refusal	DS-4	5.50
6.25m. Moderately weathered, yellowish grey to deep grey, medium to fine grained, fractured sandstone.		50 3.0 cm Penth.	*SPT-7	6.25-6.28
			R3	CR=41% RQD=23%
		NX rotary drilling from 4.90m to 11.50m		6.25
			R4	CR=46% RQD=20%
				7.00
7.75m. Moderately to slightly weathered, yellowish grey to deep grey, medium to fine grained, fractured sandstone.			R5	CR=51% RQD=20%
				7.75
			R6	CR=56% RQD=31%
				8.50
			R7	CR=68% RQD=34%
				9.25
			R8	CR=72% RQD=31%
				10.00
			R9	CR=73% RQD=37%
				10.75
11.50m.				11.50

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 08/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 26

Co-ordinates E=781 N=4713

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 23/08/17
Completion Date : 24/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.588 m.
Water Struck At :
Standing Water Level : 1.10 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of silty clay with fly ash.				
0.80m. Stiff to very stiff, deep grey to light grey, silty clay. Obs. kankars. (CI)		3 4 5 (9)	DS-1	0.50
			UDS-1	1.00-1.45
			SPT-1	1.45-1.90
			DS-2	2.50
		4 6 6 (12)	SPT-2	3.00-3.45
			UDS-2	4.00-4.45
		7 9 13 (22)	SPT-3	4.45-4.90
5.00m. Very dense, brownish grey, silty medium grained sand with decomposed rock. (SM)		42 58 (>100) 10.0 cm Pentn.	SPT-4	5.10-5.35
5.50m. Moerately to slightly weathered, yellowish grey, fine grained, fractured sandstone.		100 Refusal 4.0 cm Pentn. NX rotary drilling from 5.50m to 15.00m	*SPT-5	5.50-5.54
			R1	CR=43% RQD=18% 5.50 - 6.25
			R2	CR=65% RQD=NIL 6.25 - 7.00
			R3	CR=67% RQD=23% 7.00 - 7.75
			R4	CR=65% RQD=27% 7.75 - 8.50
			R5	CR=71% RQD=39% 8.50 - 9.25
			R6	CR=74% RQD=41% 9.25 - 10.00
10.00m. Fresh, yellowish grey to blackish grey, fine grained, fractured sandstone.			R7	CR=80% RQD=22% 10.00 - 10.75
			R8	CR=83% RQD=43% 10.75 - 11.50
			R9	CR=81% RQD=39% 11.50 - 12.25
			R10	CR=86% RQD=49% 12.25 - 13.00
			R11	CR=81% RQD=20% 13.00 - 14.00
			R12	CR=88% RQD=51% 14.00 - 15.00
15.00m. N.B. - '*' means sample could not be recovered.				

BH-26/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 12/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 27

Co-ordinates E=698 N=4635

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 16/08/17
Completion Date : 17/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.642 m.
Water Struck At :
Standing Water Level : 1.80 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of ash.			DS-1	0.50
0.80m.			UDS-1	1.00-1.45
Stiff deep grey, silty clay. Obs. kankars. (Cl)		4 6 9 (15)	SPT-1	1.45-1.90
			DS-2	2.50
3.00m.		6 8 10 (18)	SPT-2	3.00-3.45
Very stiff deep grey, silty clay. Obs. kankars. (Cl)		7 9 10 (19)	UDS-2	4.00-4.45
			SPT-3	4.45-4.90
5.20m.			DS-3	5.50
Very dense, brownish grey, silty medium grained sand with decomposed rock. (SM)		43 57 (>100) 12.0 cm Penetn.	SPT-4	6.00-6.27
6.40m.		100 Refusal 4.0 cm Penetn.	*SPT-5	6.40-6.44
		NX rotary drilling from 6.40m to 13.75m	R1	CR=40% RQD=20% 6.40-7.00
			R2	CR=56% RQD=23% 7.00-7.75
			R3	CR=61% RQD=31% 7.75-8.50
			R4	CR=60% RQD=40% 8.50-9.25
Moderately to slighly weathered / fresh, brownish grey, medium to fine grained, fractured sandstone.			R5	CR=63% RQD=40% 9.25-10.00
			R6	CR=65% RQD=13% 10.00-10.75
			R7	CR=76% RQD=69% 10.75-11.50
			R8	CR=81% RQD=67% 11.50-12.25
			R9	CR=80% RQD=57% 12.25-13.00
			R10	CR=93% RQD=89% 13.00-13.75
13.75m.				

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 12/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 28

Co-ordinates E= 692 N=4708

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
		Disturbed (DS)	3
Vane (V)		Water Sample (WS)	0

Commencement Date : 13/08/17
Completion Date : 14/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.903 m.
Water Struck At :
Standing Water Level : 1.80 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of ash.				
0.60m. Stiff to very stiff, brownish grey, silty clay. Obs. kankars. (Cl)		4 6 9 (15)	DS-1	0.50
			UDS-1	1.00-1.45
			SPT-1	1.45-1.90
		5 8 10 (18)	DS-2	2.50
			SPT-2	3.00-3.45
4.00m. Dense to very dense, brownish grey, silty medium grained sand with decompoosed rock. (SM)			*UDS-2	4.00-4.45
		10 16 21 (37)	SPT-3	4.60-5.05
			DS-3	5.50
		100 4.0 cm Penetn. (≥100)	*SPT-4	6.00-6.04
6.30m. Moderately weathered, brownish grey, medium to fine grained, fractured sandstone.		100 3.0 cm Penetn. Refusal	*SPT-5	6.30-6.33
		NX rotary drilling from 6.30m to 15.00m	R1	CR=44% RQD=18% 6.30-7.00
			R2	CR=41% RQD=NIL 7.00-7.75
			R3	CR=43% RQD=NIL 7.75-8.50
			R4	CR=58% RQD=25% 8.50-9.25
9.25m. Slightly weathered, brownish grey to deep grey, medium to fine grained, fractured sandstone.			R5	CR=73% RQD=28% 9.25-10.00
			R6	CR=68% RQD=16% 10.00-10.75
			R7	CR=69% RQD=32% 10.75-11.50
			R8	CR=67% RQD=39% 11.50-12.25
			R9	CR=72% RQD=17% 12.25-13.00
			R10	CR=69% RQD=NIL 13.00-13.75
			R11	CR=73% RQD=13% 13.75-14.50
15.00m.			R12	CR=70% RQD=NIL 14.50-15.00

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | **Created by : Chandrani** | **Created on : 29/08/2017** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO. 29

Co-ordinates E=596 N=4668

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 23/08/17
Completion Date : 24/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 69.262 m.
Water Struck At :
Standing Water Level : 1.06 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of blackish grey, silty clay with ash. 0.60m.			DS-1	0.50
		2 4 6 (10)	UDS-1	1.00-1.45
			SPT-1	1.45-1.90
Stiff, steel grey, silty clay. (Cl)			DS-2	2.50
		3 5 8 (13)	SPT-2	3.00-3.45
3.90m. Very dense, yellowish brown, silty sand with deocomposed rock. (SM)		65 35 (>100) 5.0 cm Pentn.	SPT-3	4.00-4.20
4.50m.		100 (>100) 2.0 cm Pentn.	*SPT-4	4.50-4.52
Moderately weathered, light grey, medium grained, fractured sandstone.		NX rotary drilling from 4.50m to 15.00m	R1	CR=41% RQD=13% 5.25
			R2	CR=44% RQD=28% 6.00
			R3	CR=42% RQD=20% 6.75
			R4	CR=44% RQD=16% 7.50
8.25m.			R5	CR=43% RQD=17% 8.25
			R6	CR=61% RQD=28% 9.00
			R7	CR=52% RQD=37% 9.75
			R8	CR=62% RQD=16% 10.50
Slightly weathered, light grey, medium grained, fractured sandstone.			R9	CR=60% RQD=27% 11.25
			R10	CR=62% RQD=31% 12.00
			R11	CR=63% RQD=20% 12.75
			R12	CR=68% RQD=32% 13.50
			R13	CR=71% RQD=52% 14.25
15.00m.			R14	CR=79% RQD=25% 15.00

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975	Created by : Chandrani	Created on : 02/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 30

Co-ordinates E=871 N=4772

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	6	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	6
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 23/08/17
Completion Date : 24/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 73.442 m.
Water Struck At :
Standing Water Level : 1.45 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of blackish grey to brownish grey, silty clay / clayey silt with ash & boulders		4 6 90 (≥100) 5.0 cm Penetn.	DS-1 *UDS-1 SPT-1	0.50 1.00-1.45 1.60-1.95
2.50m.			DS-2	2.50
Very stiff, brownish grey, silty clay. (Cl)		5 7 9 (16) 7 9 11 (20)	SPT-2 UDS-2 SPT-3	3.00-3.45 4.00-4.45 4.45-4.90
5.30m.				
Very dense, grey, silty medium grained sand. Obs. decomposed rock. (SM)		36 64 (≥100) 10.0 cm Penetn. 100 Refusal 4.0 cm Penetn.	SPT-4 *SPT-5	5.30-5.55 5.70-5.74
5.80m.		100 Refusal 3.0 cm Penetn.	*SPT-6	5.85-5.88
Moderately weathered, yellowish grey, fine grained, fractured sandstone.		NX rotary drilling from 5.80m to 15.00m	R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12	5.80 CR=45% RQD=NIL 6.50 CR=48% RQD=NIL 7.25 CR=62% RQD=15% 8.00 CR=52% RQD=25% 8.75 CR=77% RQD=49% 9.50 CR=80% RQD=21% 10.25 CR=84% RQD=77% 11.00 CR=80% RQD=28% 11.75 CR=83% RQD=45% 12.50 CR=92% RQD=21% 13.25 CR=82% RQD=56% 14.00 CR=92% RQD=85% 15.00
7.25m.				
Moderately to slightly weathered, yellowish grey, fine grained, fractured sandstone.				
9.50m.				
Slightly weathered / fresh, yellowish grey to deep grey, fine grained, fractured sandstone.				
15.00m.				

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 29/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 31

Co-ordinates E=747 N=4828

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	2
Cone (Pc)		Penetrometer (SPT)	5
		Disturbed (DS)	2
Vane (V)		Water Sample (WS)	0

Commencement Date : 18/08/17
Completion Date : 20/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 71.993 m.
Water Struck At :
Standing Water Level : 1.25 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of silty clay with boulders, moorum & ash.		7 15 12 (27)	DS-1	0.50
			*UDS-1	1.00-1.35
			SPT-1	1.45-1.90
2.00m. Stiff, deep grey, silty clay. (Cl)		4 5 5 (10)	DS-2	2.50
			SPT-2	3.00-3.45
4.00m. Very dense, brownish grey, silty sand with decomposed rock. (SM)		16 29 32 (61)	*UDS-2	4.00-4.30
			SPT-3	4.55-5.00
		100 5.0 cm Penth. (>100)	*SPT-4	5.30-5.35
5.60m. Highly to moderately weathered, brownish grey to grey, medium to fine grained, fractured sandstone.		100 3.0 cm Penth. (>100) NX rotary drilling from 5.60m to 15.00m	*SPT-5	5.60-5.63
			R1	CR=41% RQD=NIL 5.60-6.25
			R2	CR=48% RQD=15% 6.25-7.00
			R3	CR=36% RQD=15% 7.00-7.75
			R4	CR=31% RQD=NIL 7.75-8.50
			R5	CR=47% RQD=NIL 8.50-9.25
9.25m. Slightly weathered, grey, medium to fine grained, fractured sandstone.			R6	CR=60% RQD=NIL 9.25-10.00
			R7	CR=64% RQD=NIL 10.00-10.75
			R8	CR=71% RQD=43% 10.75-11.50
			R9	CR=76% RQD=73% 11.50-12.25
			R10	CR=78% RQD=43% 12.25-13.00
			R11	CR=72% RQD=15% 13.00-13.75
			R12	CR=77% RQD=60% 13.75-14.50
15.00m.			R13	CR=79% RQD=61% 14.50-15.00

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975	Created by : Chandrani	Created on : 29/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 32

Co-ordinates E=637 N=4914

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 21/08/17
Completion Date : 22/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.335 m.
Water Struck At :
Standing Water Level : 0.80 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Very stiff to hard, brownish grey, silty clay with sand mixture. (Cl)		8 9 10 — 19	DS-1	0.50
			UDS-1	1.00-1.45
			SPT-1	1.45-1.90
2.95m. Very dense, brownish grey, silty sand with decomposed rock. (SM)		16 19 23 — 42	SPT-2	2.50-2.95
		100 — 4.0 cm Penetn. — ≥100	*SPT-3	3.20-3.24
3.40m. Moderately weathered, brownish grey, fine grained, fractured sandstone.		100 — 3.0 cm Penetn. — ≥100	*SPT-4	3.40-3.43
4.75m. Slightly weathered, brownish grey, fine grained, fractured sandstone.		NX rotary drilling from 3.40m to 15.00m	R1	CR=42% RQD=NIL
			R2	CR=41% RQD=13%
			R3	CR=73% RQD=56%
			R4	CR=72% RQD=63%
			R5	CR=76% RQD=58%
			R6	CR=75% RQD=22%
			R7	CR=77% RQD=50%
8.50m. Fresh, light grey, fine grained, fractured sandstone.			R8	CR=82% RQD=57%
			R9	CR=81% RQD=38%
			R10	CR=85% RQD=20%
			R11	CR=81% RQD=48%
			R12	CR=83% RQD=23%
15.00m.			R13	CR=84% RQD=72%

3.40 → 4.00 → 4.75 → 5.50 → 6.25 → 7.00 → 7.75 → 8.50 → 9.25 → 10.00 → 11.50 → 13.00 → 14.50 → 15.00

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 29/08/2017	Sheet No:

BORE LOG DATA SHEET — BORE HOLE NO. 33

Co-ordinates E=512 N=4853

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	1

Commencement Date : 21/08/17
Completion Date : 22/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 70.642 m.
Water Struck At :
Standing Water Level : 1.10 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Blackish grey, silty clay. (Cl)				
0.70m.			DS-1	0.50
			UDS-1	1.00-1.45
			WS-1	1.10
		12		
Stiff to very stiff, steel grey, silty clay. (Cl)		3 5 7	SPT-1	1.45-1.90
			DS-2	2.50
		16		
		4 7 9	SPT-2	3.00-3.45
3.50m. Very dense, yellowish brown, silty sand with decomposed rock. (SM)		>100		
		100 14.0 cm Penetn.	SPT-3	3.80-3.94
4.20m.		100 >100 3.0 cm Penetn.	*SPT-4	4.20-4.23
Moderately weathered, yellowish brown, medium grained fractured sandstone.		NX rotary drilling from 4.20m to 15.00m	R1	CR=44% RQD=24% 4.20-5.00
			R2	CR=42% RQD=14% 5.00-5.75
			R3	CR=42% RQD=NIL 5.75-6.50
			R4	CR=50% RQD=14% 6.50-7.25
			R5	CR=60% RQD=13% 7.25-8.00
8.00m.			R6	CR=56% RQD=NIL 8.00-8.75
			R7	CR=48% RQD=16% 8.75-9.50
			R8	CR=54% RQD=30% 9.50-10.25
			R9	CR=40% RQD=NIL 10.25-11.00
Moderately to slightly weathered, light grey, medium grained, fractured sandstone.			R10	CR=61% RQD=15% 11.00-11.75
			R11	CR=56% RQD=17% 11.75-12.50
			R12	CR=55% RQD=17% 12.50-13.25
			R13	CR=53% RQD=35% 13.25-14.00
			R14	CR=62% RQD=37% 14.00-14.50
15.00m.			R15	CR=71% RQD=46% 14.50-15.00

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 19/08/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 34

Co-ordinates E=1032 N=3212

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	3	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	3
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 12/08/17
Completion Date : 13/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 67.594 m.
Water Struck At :
Standing Water Level : 1.10 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of silty sand with moourm & brick pieces.			DS-1	0.50
0.80m. Stiff, yellowish brown, clayey sandy silt. (Cl)		3 4 4 (8)	UDS-1	1.00-1.45
			SPT-1	1.45-1.90
2.50m. Medium dense, yellowish brown, silty sand with clay binders. (SM)		5 7 13 (20)	DS-2	2.50
			SPT-2	3.00-3.45
4.00m.		Refusal 100 3.0 cm Penth.	*SPT-3	4.00-4.03
Highly to moderately weathered, yellowish brown to whitish grey, medium grained, fractured sandstone.		NX rotary drilling from 4.00m to 10.00m	R1	CR=30% RQD=16% 4.00-4.75
			R2	CR=46% RQD=NIL 4.75-5.50
			R3	CR=44% RQD=14% 5.50-6.25
			R4	CR=48% RQD=20% 6.25-7.00
7.00m. Moderately to slightly weathered, yellowish brown to whitish grey, medium grained, moderately fractured sandstone.			R5	CR=60% RQD=22% 7.00-7.75
			R6	CR=62% RQD=40% 7.75-8.50
			R7	CR=72% RQD=44% 8.50-9.25
			R8	CR=76% RQD=56% 9.25-10.00
10.00m. N.B. - '*' means sample could not be recovered.				

BH-34/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | Created by : Chandrani | Created on : 19/08/2017 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 35

Co-ordinates E=972 N=3163

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 13/08/17
Completion Date : 14/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 67.392 m.
Water Struck At :
Standing Water Level : 1.00 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m Filled up soil consists of silty sand with boulders & brick bats.				
0.80m Medium to stiff, yellowish brown, silty clay with grey patches. Obs. boulders. (Cl)			DS-1	0.70
			UDS-1	1.00-1.45
		2 3 4 (7)	SPT-1	1.45-1.90
			DS-2	2.50
		5 6 8 (14)	SPT-2	3.00-3.45
3.90m Hard, yellowish brown, silty clay with decomposed rock. (Cl)		34 68 (>100) 8.0 cm Pentn.	SPT-3	3.90-4.13
4.30m		100 Refusal 4.0 cm Pentn.	*SPT-4	4.30-4.34
Highly to moderately weathered, yellowish brown to brownish grey, medium grained, fractured sandstone.		NX rotary drilling from 4.30m to 10.00m	R1 R2 R3 R4 R5 R6 R7 R8	CR=38% RQD=16% CR=44% RQD=13% CR=48% RQD=14% CR=40% RQD=NIL CR=48% RQD=14% CR=54% RQD=16% CR=50% RQD=32% CR=64% RQD=20%
8.00m Moderately to slightly weathered, brownish grey, medium grained, fractured sandstone.				4.30 5.00 5.75 6.50 7.25 8.00 8.75 9.50 10.00
10.00m N.B. – '*' means sample could not be recovered.				

BH-35/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 08/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 36

Co-ordinates E=925 N=3070

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 22/08/17
Completion Date : 23/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 68.212 m.
Water Struck At :
Standing Water Level : 1.40 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15cm.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Filled up soil consists of light grey, silty sand, fly ash mixed.		2 2 2 (4)	DS-1	0.50
			*UDS-1	1.00-1.45
			SPT-1	1.55-2.00
2.00m.			DS-2	2.50
Very stiff, light brownish grey, silty clay with fine sand mixture. (Cl)		5 8 11 (19)	SPT-2	3.10-3.55
3.70m.			DS-3	3.80
Very dense, greyish brown, silty sand with rock dust. (SM)		33 67 (>100) 3.0 cm Penetn.	SPT-3	4.00-4.18
		100 3.0 cm Penetn. Refusal	*SPT-4	4.25-4.28
4.40m.		100 2.0 cm Penetn. Refusal	*SPT-5	4.40-4.42
Highly weathered, yellowish brown, fine grained, highly fractured sandstone.		NX rotary drilling from 4.40m to 10.00m	R1	CR=21% RQD=NIL (4.40 - 5.25)
			R2	CR=22% RQD=NIL (5.25 - 6.00)
6.00m.			R3	CR=26% RQD=13% (6.00 - 6.75)
Highly to moderately weathered, yellowish brown to grey, fine grained, highly fractured sandstone.			R4	CR=38% RQD=31% (6.75 - 7.50)
			R5	CR=37% RQD=NIL (7.50 - 8.25)
			R6	CR=28% RQD=NIL (8.25 - 9.00)
9.00m.			R7	CR=56% RQD=16% (9.00 - 10.00)
Moderately weathered, yellowish brown to grey, fine grained, highly fractured sandstone.				
10.00m.				

N.B. - '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 08/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 37

Co-ordinates E=875 N=3159

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	4
		Water Sample (WS)	0

Commencement Date : 23/08/17
Completion Date : 24/08/17
Bore Hole Diameter : 150 mm. / N. X.
Level Of Ground : 68.414 m.
Water Struck At :
Standing Water Level : 1.30 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Loose, yellowish brown, silty sand. (SM)		2 2 2 — 4	DS-1	0.50
			*UDS-1	1.00-1.45
			SPT-1	1.60-2.05
2.70m			DS-2	2.60
Very sitff to hard, deep grey, silty clay with calcareous nodules. Obs. decomposd rock pieces. (Cl)		2 5 13 — 18	SPT-2	2.80-3.25
		100 Refusal 10.0 cm Pentn.	SPT-3	3.40-3.50
3.55m		100 Refusal 3.0 cm Pentn.	*SPT-4	3.55-3.58
		NX rotary drilling from 3.55m to 10.00m	R1	CR=29% RQD=NIL
			R2	CR=42% RQD=16%
Highly to moderately weathered, yellowish brown, medium grained, highly to moderately fractured sandstone.			R3	CR=44% RQD=16%
			R4	CR=46% RQD=38%
			R5	CR=45% RQD=19%
			R6	CR=53% RQD=21%
8.00m			R7	CR=64% RQD=24%
Slightly weathered, grey, fine grained, moderately fractured sandstone.			R8	CR=61% RQD=20%
			R9	CR=64% RQD=28%
10.00m				

3.55 — 4.25 — 5.00 — 5.75 — 6.50 — 7.25 — 8.00 — 8.75 — 9.50 — 10.00

N.B. – '*' means sample could not be recovered.

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | Created by : Chandrani | Created on : 20/09/2017 | Sheet No:

BORE LOG DATA SHEET | BORE HOLE NO. CST- 01(M) | Co-ordinates E=1469 N=3904

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	2	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	2
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 16/08/17
Completion Date : 17/08/17
Bore Hole Diameter : 150 mm./ N.X.
Level Of Ground : 69.906 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN=15CM	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Greyish yellow, silty clay with kankars. Obs. sand mixture. (Cl)			DS-1	0.60
		>100	UDS-1	1.00-1.45
1.50m. Very dense, greyish brown, silty sand with decomposed rock. (SM)		35 54 11	SPT-1	1.45-1.78
1.90m. Highly to moderately weathered, yellowish brown, fine to medium grained, fractured rock.		100 3.0 cm Pentn. Refusal 3.0 cm Pentn. NX rotary drilling from 1.90m to 16.00m	*SPT-2	1.90-1.93
3.25m. Moderately to slightly weathered, yellowish brown, fine to medium grained, fractured rock.			R1	CR=35% RQD=NIL 1.90-2.50
			R2	CR=44% RQD=20% 2.50-3.25
			R3	CR=62% RQD=40% 3.25-4.00
			R4	CR=56% RQD=23% 4.00-4.75
			R5	CR=72% RQD=42% 4.75-5.50
			R6	CR=52% RQD=16% 5.50-6.25
			R7	CR=64% RQD=17% 6.25-7.00
			R8	CR=80% RQD=44% 7.00-7.75
			R9	CR=66% RQD=20% 7.75-8.50
			R10	CR=80% RQD=NIL 8.50-9.25
9.25m. Slightly weathered / fresh, brownish grey, medium to fine grained, fractureed rock.			R11	CR=76% RQD=32% 9.25-10.00
			R12	CR=69% RQD=22% 10.00-10.75
			R13	CR=84% RQD=18% 10.75-11.50
			R14	CR=84% RQD=40% 11.50-12.25
			R15	CR=78% RQD=24% 12.25-13.00
			R16	CR=80% RQD=14% 13.00-13.75
			R17	CR=72% RQD=52% 13.75-14.50
			R18	CR=91% RQD=37% 14.50-15.25
			R19	CR=94% RQD=48% 15.25-16.00
16.00m.				

N.B. - '*' means sample could not be recovered.

BH-1/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | Created by : Chandrani | Created on : 21/09/2017 | Sheet No:

BORE LOG DATA SHEET | BORE HOLE NO. CST- 03(M) | Co-ordinates E=1305 N=3987

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	2	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	2
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 09/08/17
Completion Date : 10/08/17
Bore Hole Diameter : 150 mm./ N.X.
Level Of Ground : 70.006 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN=15CM	SAMPLES Ref. No	Depth (m)
0.00m. Very dense, greyish yellow, silty sand with decomposed rock. (SM)		Refusal 76 8.0 cm Penetn.	DS-1	0.50
1.00m. Moderately weathered, brownish yellow, medium to fine grained, fractured rock.		Refusal 100 2.0 cm Penetn. NX rotary drilling from 1.00m to 16.00m	*SPT-1	0.60-0.68
3.00m. Moderately weathered, deep grey, medium to fine grained, fractured rock.			*SPT-2	1.00-1.02
4.20m. Slightly weathered / fresh, yellowish grey, medium to fine grained, fractured rock			R1	CR=53% RQD=29% 1.00-1.75
6.25m. Slightly weathered / fresh, deep grey, fine grained, fractured rock.			R2	CR=56% RQD=51% 1.75-2.50
			R3	CR=65% RQD=51% 2.50-3.25
			R4	CR=67% RQD=36% 3.25-4.00
			R5	CR=48% RQD=35% 4.00-4.75
			R6	CR=65% RQD=28% 4.75-5.50
			R7	CR=87% RQD=45% 5.50-6.25
			R8	CR=72% RQD=64% 6.25-7.00
			R9	CR=82% RQD=56% 7.00-8.50
			R10	CR=83% RQD=82% 8.50-10.00
			R11	CR=84% RQD=74% 10.00-11.50
			R12	CR=85% RQD=82% 11.50-13.00
			R13	CR=81% RQD=73% 13.00-14.50
			R14	CR=83% RQD=72% 14.50-16.00
16.00m.				

N.B. - '*' means sample could not be recovered.

BH-3/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW). CETEST

Job No : 3975 | Created by : Chandrani | Created on : 22/09/2017 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. PMT- 02

Co-ordinates E=1317 N=3914

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	2	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	2
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 13/08/17
Completion Date : 14/08/17
Bore Hole Diameter : N.X.
Level Of Ground : 70.132 m.
Water Struck At :
Standing Water Level : 2.10 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN=15CM	SAMPLES Ref. No	Depth (m)
0.00m.				
Stiff, light grey, silty clay / clayey silt with sand mixture & decomposed rock. (Cl)		3 4 6 10	DS-1	0.50
			SPT-1	1.50-1.95
		Refusal		
2.00m.		100 2.0 cm Pentn.	*SPT-2	2.00-2.02
		NX rotary drilling from 2.00m to 12.50m	R1	CR=54% RQD=30% 2.00-2.75
			R2	CR=58% RQD=48% 2.75-3.50
Moderately to slightly weathered, yellowish grey, medium to fine grained, slightly fractured rock.			R3	CR=67% RQD=53% 3.50-4.25
			R4	CR=53% RQD=40% 4.25-5.00
			R5	CR=69% RQD=32% 5.00-5.75
5.75m.			R6	CR=89% RQD=47% 5.75-6.50
			R7	CR=95% RQD=64% 6.50-7.25
			R8	CR=87% RQD=56% 7.25-8.75
Fresh, deep grey, fine grained, fractured rock.			R9	CR=86% RQD=84% 8.75-10.25
			R10	CR=90% RQD=80% 10.25-11.75
N.B. - '*' means sample could not be recovered.			R11	CR=91% RQD=82% 11.75-12.50
12.50m.				

BH-2/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 22/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. PMT-03

Co-ordinates E=1504 N=3979

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	2	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	2
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 16/08/17
Completion Date : 17/08/17
Bore Hole Diameter : N.X.
Level Of Ground : 70.180 m.
Water Struck At :
Standing Water Level : 1.90 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN=15CM	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of brownish yellow, silty clay.			DS-1	0.50
0.70m. Very dense, brownish yellow, silty sand with decomposed rock. (SM)		39 61 >100	SPT-1	1.00-1.17
1.20m.		100 2.0 cm Pentn. Refusal	*SPT-2	1.20-1.22
Highly to moderately weathered, deep yellow, medium to fine grained, highly fractured rock.		2.0 cm Pentn.	R1	CR=29% RQD=NIL
2.50m.		NX rotary drilling from 1.20m to 12.50m	R2	CR=44% RQD=16%
			R3	CR=83% RQD=24%
			R4	CR=86% RQD=26%
			R5	CR=90% RQD=18%
Fresh, deep yellow, medium to fine grained, highly fractured rock.			R6	CR=81% RQD=21%
			R7	CR=84% RQD=36%
8.50m.			R8	CR=93% RQD=NIL
Fresh, deep grey, medium to fine grained, fractured rock.			R9	CR=87% RQD=58%
			R10	CR=94% RQD=72%
N.B. - '*' means sample could not be recovered. 12.50m.				

1.20 1.75 2.50 3.25 4.00 5.50 7.00 8.50 10.00 11.50 12.50

BH-3/Sheet-1

Project : Preliminary G. I. Work for Talcher Thermal Power Project-III (2x660 MW).			CETEST
Job No : 3975	Created by : Chandrani	Created on : 22/09/2017	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. PMT-04

Co-ordinates E=1400 N=4240

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	4	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	4
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 12/08/17
Completion Date : 13/08/17
Bore Hole Diameter : N.X.
Level Of Ground : 72.312 m.
Water Struck At :
Standing Water Level : 1.20 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN=15CM	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Medium dense, silty sand / sandy silt with decomposed rock & clay mixture. (SM)		3 4 8 (12)	DS-1	0.50
			SPT-1	1.50-1.95
			DS-2	2.50
		5 8 12 (20)	SPT-2	3.00-3.45
3.50m		69 Refusal 5.0 cm Pentn.	*SPT-3	3.50-3.55
Very dense, silty sand / sandy silt with with decomposed rock & clay mixture. (SM) 4.00m		100 Refusal 2.0 cm Pentn.	*SPT-4	4.00-4.02
Highly to moderately weathered, greyish yellow, medium to fine grained, fractured rock.		NX rotary drilling from 4.00m to 12.0m	R1	CR=39% RQD=19% 4.00-4.75
			R2	CR=51% RQD=NIL 4.75-5.50
			R3	CR=49% RQD=20% 5.50-6.25
6.25m			R4	CR=52% RQD=NIL 6.25-7.00
Moderately to slightly weathered, greyish yellow, medium to fine grained, fractured rock.			R5	CR=55% RQD=20% 7.00-7.75
			R6	CR=67% RQD=33% 7.75-8.50
9.00m			R7	CR=65% RQD=56% 8.50-9.25
			R8	CR=71% RQD=51% 9.25-10.00
Slightly weathered / fresh, deep grey, fine grained, slightly fractured rock.			R9	CR=97% RQD=67% 10.00-10.75
			R10	CR=98% RQD=97% 10.75-11.50
			R11	CR=86% RQD=94% 11.50-12.00
12.00m				

N.B. – '*' means sample could not be recovered.

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 1	CO-ORDINATES: East: 1413.2	North: 3923.08
SITE LOCATION :	Tr Yard	START DATE: 5/26/2009	END DATE: 5/28/2009
GROUND REDUCED LEVEL:	69.930	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.45	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1			Stiff greyish brown Clay with low plasticity	1	UDS				Recovered	---	---		
2	67.93			2	SPT				8 cm in 100 blows,N>100	---	---		
	67.83		Completely weathered deeply decomposed light yellowish Sandstone	2.1	RC					68	16		
3			Moderately weathered light yellowish medium grained Sandstone	3.1	RC					65	12		
4	65.83			4.1	RC								
	65.43		Moderately weathered,light yellowish fine grained Siltstone with carbonaceous Clay							88	36		
5				5.1	RC								
6			Moderately to slightly weathered dark medium grained yellowish brown Sandstone	6.1	RC					75	60		
7										77	77		
	62.83			7.1	RC								
8			Slightly weathered light greyish fine grained Sandstone	8.1	RC					78	40		
	61.83												
9			Moderately to slightly weathered light greyish fine grained Sandstone	9.1	RC					79	54		
10										68	11		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 1	CO-ORDINATES: East: 1413.2	North: 3923.08
SITE LOCATION :	Tr Yard	START DATE: 5/26/2009	END DATE: 5/28/2009
GROUND REDUCED LEVEL:	69.930	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.45	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	59.83			10.1	RC								
										77	48		
11			Slightly weathered dark greyish medium grained Sandstone	11.1	RC								
										88	88		
12	57.83			12.1	RC								
			Moderately weathered dark greyish medium grained Sandstone with carbonaceous clay bands							81	27		
13	56.83			13.1	RC								
										75	0		
14				14.1	RC								
			Highly to moderately weathered dark greyish fragmented Sandstone(weak rock)							75	18		
15				15.1	RC								
										85	27		
16	53.83			16.1	RC								
			Slightly weathered light greyish Siltstone with Sandstone patches							80	68		
17	52.83			17.1	RC								
			Highly to moderately weathered light greyish medium grained fragmented Sandstone							80	0		
18	51.83			18.1	RC								
										80	42		
19			Highly to moderately weathered light greyish fine grained Siltstone with Sandstone patches.	19.1	RC								
										80	0		
20	49.93												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 2	CO-ORDINATES: East: 1500	North: 3923.02
SITE LOCATION :	Tr Yard	START DATE: 5/28/2009	END DATE: 5/30/2009
GROUND REDUCED LEVEL:	69.977	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	3.35	CASING DIA:	150mm upto 3.20m & Nx from 3.20 to 16.20m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1			Stiff yellowish brown Clay with low plasticity	1.5	UDS				Recovered	---	---		
2	67.477			2.4	SPT				8 cm in 100blows,N>100	---	---		
3	66.777		Completely weathered deeply decomposing light yellowish brown Sandstone	3.2									
4			Highly to moderately weathered yellowish brown fine grained Siltstone with Sandstone patches	4.2						42	10		
5	64.777			5.2						64	12		
6			Slightly weathered yellowish brown fine grained Sandstone	6.2						85	77		
7				7.2						86	62		
8	61.777			8.2						92	88		
9			Slightly weathered medium grained yellowish brown Sandstone	9.2						90	24		
10										78	56		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Borehole termination at 16.2 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 2	CO-ORDINATES: East: 1500	North: 3923.02
SITE LOCATION :	Tr Yard	START DATE: 5/28/2009	END DATE: 5/30/2009
GROUND REDUCED LEVEL:	69.977	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	3.35	CASING DIA:	150mm upto 3.20m & Nx from 3.20 to 16.20m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	59.777			10.2						78	56		
11			Slightly weathered light greyish compacted Sandstone	11.2						78	42		
12										90	90		
	57.777			12.2									
	57.477		Medium grained Sandstone with Clay patches										
13			Slightly weathered greyish fine grained compacted Sandstone							90	70		
	56.777			13.2									
14										83	52		
				14.2									
15			Slightly weathered dark greyish compacted medium to coarse grained Sandstone							92	75		
				15.2									
16										92	67		
	53.777												
17													
18													
19													
20													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Borehole termination at 16.2 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 3	CO-ORDINATES: East: 1306.11	North: 3967.14
SITE LOCATION :	TG Hall	START DATE: 6/15/2009	END DATE: 6/22/2009
GROUND REDUCED LEVEL:	70.695	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 2.75m & Nx from 2.75 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	70.495		Filled up soil consisting of Sand										
1			Stiff greyish Sandyclay	1.5	UDS				Recovered	---	---		
2	68.495												
3			Very dense greyish Clayeysand	2.75	SPT	5	5	48	53	---	---		
	67.495			3.2									
4			Moderately weathered light yellowish fine grained Sandstone with Siltstone patches							67	32		
	66.495			4.2									
5			Slightly weathered light yellowish fine grained Sandstone with thin layer of Shale							94	94		
	65.495			5.2									
6										93	93		
				6.2									
7			Slightly weathered light yellowish brown fine grained Sandstone							100	100		
				7.2									
8										95	80		
	62.495			8.2									
9										80	72		
			Slightly weathered greyish fine grained Sandstone	9.2									
10										84	84		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 3	CO-ORDINATES: East: 1306.11	North: 3967.14
SITE LOCATION :	TG Hall	START DATE: 6/15/2009	END DATE: 6/22/2009
GROUND REDUCED LEVEL:	70.695	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 2.75m & Nx from 2.75 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Slightly weathered greyish fine grained Sandstone *(continued)*	10.2						84	84		
				11.2						95	87		
12										92	72		
	58.495			12.2									
13			Moderately weathered greyish laminated Shale							95	37		
	57.495			13.2									
14			Highly to moderately weathered greyish fine to medium grained Sandstone with Siltstone patches							92	0		
	56.495			14.2									
15			Slightly weathered greyish fine grained Sandstone							99	78		
	55.495			15.2									
16			Moderately weathered greyish fine to medium grained Sandstone with Siltstone patches							88	0		
				16.2									
17										94	0		
				17.2									
18										86	0		
	52.495			18.2									
19			Highly to moderately weathered greyish Siltstone with patches of Shale							85	0		
	51.495			19.2									
20			Moderately weathered greyish fine to medium grained Sandstone							68	31		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 3	CO-ORDINATES: East: 1306.11	North: 3967.14
SITE LOCATION :	TG Hall	START DATE: 6/15/2009	END DATE: 6/22/2009
GROUND REDUCED LEVEL:	70.695	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 2.75m & Nx from 2.75 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
21			Moderately weathered greyish fine to medium grained Sandstone *(continued)*	20.2						68	31		
										65	32		
	49.495			21.2									
22			Slightly weathered greyish Siltstone with patches of Shale							95	70		
	48.495			22.2									
23			Moderately to slightly weathered greyish Siltstone to fine grained Sandstone							73	47		
				23.2									
24										83	74		
				24.2									
25										85	50		
				25.2									
26										68	17		
	44.495			26.2									
27			Slightly weathered greyish fine grained Sandstone							93	76		
				27.2									
28										85	71		
				28.2									
29										82	75		
	41.495			29.2									
30	40.695		Highly to moderately weathered greyish Siltstone to Sandstone							80	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 4	CO-ORDINATES: East: 1384.37	North: 3966.57
SITE LOCATION :	TG Hall	START DATE: 5/21/2009	END DATE: 5/23/2009
GROUND REDUCED LEVEL:	70.367	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.65	CASING DIA:	150mm upto 3.00m & Nx from 3.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1			Stiff to very stiff greyish brown Clayey Sand	1.5	UDS				Recovered	---	---		
2													
3	67.367			3	SPT				13 cm in 100blows,N>100	---	---		
	66.867		Completely weathered deeply decomposed brownish Sandstone	3.5									
4			Moderately weathered light brownish Siltstone							100	19		
	65.867			4.5									
5			Highly to moderately weathered light greyish medium grained Sandstone							86	0		
	64.867			5.5									
6										84	0		
				6.5									
7										80	47		
			Highly to moderately weathered medium grained greyish Siltstone to fine grained Sandstone	7.5									
8										88	52		
				8.5									
9										84	0		
				9.5									
10										90	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No:

Borehole termination at 20 m

CLIENT:	NTPC
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)
BOREHOLE ID: BH 4	CO-ORDINATES: East: 1384.37 North: 3966.57
SITE LOCATION : TG Hall	START DATE: 5/21/2009 END DATE: 5/23/2009
GROUND REDUCED LEVEL: 70.367	DRILLING METHOD: Rotary
GROUND WATER TABLE DEPTH: 0.65	CASING DIA: 150mm upto 3.00m & Nx from 3.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Highly to moderately weathered medium grained greyish Siltstone to fine grained Sandstone *(continued)*	10.5						90	0		
										82	0		
12				11.5						70	0		
13				12.5						83	0		
14				13.5						88	0		
	55.867			14.5									
15			Highly to moderately weathered light greyish medium grained Sandstone							81	11		
16				15.5						82	0		
	53.867			16.5									
17			Highly to moderately weathered light greyish Siltstone to fine grained Sandstone							85	0		
				17.5									
18										85	0		
				18.5									
19										78	0		
				19.5									
20	50.367									78	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
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Job No:
PAGE 2 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 5	CO-ORDINATES: East: 1451.33	North: 3966.91
SITE LOCATION :	TG Hall	START DATE: 5/28/2009	END DATE: 6/2/2009
GROUND REDUCED LEVEL:	70.704	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	2.35	CASING DIA:	150mm upto 2.90m & Nx from 2.90 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	69.204		Filled up soil consisting of Clay with Gravel & Kankar	1.5	UDS				Recovered	---	---		
2			Stiff greyish Clay with low plasticity										
3	67.804			2.9	SPT				10 cm in 100 blows,N>100	---	---		
	67.504		Completely weathered yellowish brown Sandstone	3.2	RC								
4			Moderately weathered,brownish fine grained Sandstone with close spaced bedding planes	4.2	RC					70	36		
5	65.504			5.2	RC					68	32		
6			Highly to moderately weathered light brown medium graineed Sandstone	6.2	RC					92	0		
7	64.504		Moderately weathered light brown medium grained Sandstone	7.2	RC					86	28		
8	62.504			8.2	RC					78	14		
9			Moderately to slightly weathered greyish medium grained Sandstone	9.2	RC					94	41		
10										88	16		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 5	CO-ORDINATES: East: 1451.33	North: 3966.91
SITE LOCATION :	TG Hall	START DATE: 5/28/2009	END DATE: 6/2/2009
GROUND REDUCED LEVEL:	70.704	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	2.35	CASING DIA:	150mm upto 2.90m & Nx from 2.90 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	60.504			10.2	RC					88	16		
11			Moderately weathered greyish sandstone with patches of shale							93	28		
	59.504			11.2	RC								
12			Moderately weathered fine to medium grained greyish Sandstone	12.2	RC					82	10		
13										90	22		
	57.504			13.2	RC								
14			Light greyish Shale							78	0		
	56.504			14.2	RC								
15			Moderately weathered light greyish medium grained Sandstone	15.2	RC					91	12		
16										88	0		
	54.504			16.2	RC								
17			Moderately weathered light greyish fine grained Sandstone with patches of Shale							87	0		
	53.504			17.2	RC								
18			Moderately weathered light greyish fine grained Siltstone							90	37		
	52.504			18.2	RC								
	52.004		Light greyish fine grained Shale							84	17		
19				19.2	RC								
20			Highly to moderately weathered greyish medium grained Sandstone							92	31		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 5	CO-ORDINATES: East: 1451.33	North: 3966.91
SITE LOCATION :	TG Hall	START DATE: 5/28/2009	END DATE: 6/2/2009
GROUND REDUCED LEVEL:	70.704	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	2.35	CASING DIA:	150mm upto 2.90m & Nx from 2.90 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	50.504			20.2	RC					92	31		
21			Highly to moderately weathered greyish fine grained Siltstone							90	13		
	49.504			21.2	RC								
22			Highly to moderately weathered greyish fine to medium grained Sandstone							94	29		
	48.504			22.2	RC								
23			Moderately weathered greyish medium grained Sandstone with patches of Shale							90	27		
	47.504			23.2	RC								
24										80	21		
				24.2	RC								
25										90	0		
				25.2	RC								
26										92	0		
			Highly to moderately weathered greyish fine grained Sandstone with patches of Clay	26.2	RC								
27										90	0		
				27.2	RC								
28										85	0		
				28.2	RC								
29										90	10		
	41.504			29.2	RC								
30	40.704		Highly to moderately weathered greyish fine to coarse grained Sandstone							90	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 6	CO-ORDINATES: East: 1506.46	North: 3967.48
SITE LOCATION :	TG Hall	START DATE: 5/28/2009	END DATE: 5/30/2009
GROUND REDUCED LEVEL:	70.401	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	2.75	CASING DIA:	150mm upto 3.50m & Nx from 3.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	69.001		Filled up soil consisting of Clay with Kankar pieces	1.4	SPT	10	23	15	38	---	---		
2			Medium dense to dense yellowish brown SiltySand										
3	66.901			3	SPT	20	35	50	85	---	---		
4													
5			Completely weathered yellowish brown Sandstone	4.5	SPT				11 cm in 100 blows,N>100	---	---		
6	64.301			6	SPT				9 cm in 100 blows,N>100	---	---		
				6.1	RC					75	12		
7				7.1	RC					75	13		
8			Highly to moderately weathered yellowish brown sandstone	8.1	RC					90	20		
9				9.1	RC					83	0		
10													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 6	CO-ORDINATES: East: 1506.46	North: 3967.48
SITE LOCATION :	TG Hall	START DATE: 5/28/2009	END DATE: 5/30/2009
GROUND REDUCED LEVEL:	70.401	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	2.75	CASING DIA:	150mm upto 3.50m & Nx from 3.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	60.301			10.1	RC					85	23		
11			Highly to moderately weathered greyish Siltstone laminated with Clay portions & consisting of fragments of Coal	11.1	RC					88	0		
12	58.301			12.1	RC					76	10		
13				13.1	RC					92	0		
14			Highly to moderately weathered light greyish to yellowish brown fine to medium grained sandstone	14.1	RC					89	0		
15	55.301			15.1	RC					82	0		
16				16.1	RC					75	0		
17				17.1	RC					85	47		
18			Highly to moderately weathered brownish green Claystone with Siltstone patches	18.1	RC					82	12		
19				19.1	RC					99	0		
20	50.401												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
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ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No: | PAGE 2 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 7	CO-ORDINATES: East: 1561.94	North: 3968.06
SITE LOCATION :	TG Hall	START DATE: 5/21/2009	END DATE: 5/23/2009
GROUND REDUCED LEVEL:	70.222	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.95	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	70.072		Concrete pieces										
1			Yellowish brown SandyClay										
	68.822			1.4	RC								
2			Moderately weathered light brown fine to medium grained sandstone							69	17		
	67.822			2.4	RC								
3										80	76		
				3.4	RC								
4			Slightly weathered light greyish Silt to fine grained Sandstone							90	57		
				4.4	RC								
5										90	82		
	64.822			5.4	RC								
6										86	40		
			Moderately to slightly weathered light greyish medium grained Sandstone	6.4	RC								
7										69	47		
	62.822			7.4	RC								
8			Slightly weathered light greyish Siltstone							85	41		
	61.822			8.4	RC								
9										86	61		
			Moderately weathered greyish medium grained Sandstone	9.4	RC								
10										90	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
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Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 7	CO-ORDINATES: East: 1561.94	North: 3968.06
SITE LOCATION :	TG Hall	START DATE: 5/21/2009	END DATE: 5/23/2009
GROUND REDUCED LEVEL:	70.222	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.95	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Moderately weathered greyish medium grained Sandstone *(continued)*	10.4	RC					90	0		
				11.4	RC					88	13		
12										86	0		
	57.822			12.4	RC								
13			Moderately weathered greyish coarse grained Sandstone							90	12		
	56.822			13.4	RC								
14			Moderately weathered greyish Siltstone(weak rock)							90	0		
				14.4	RC								
15										96	0		
	54.822			15.4	RC								
16			Moderately weathered greyish medium grained Sandstone(weak rock)							93	0		
				16.4	RC								
17										88	0		
	52.822			17.4	RC								
18			Highly weathered greyish Siltstone(Laminated weak rock)							95	10		
				18.4	RC								
19										55	0		
				19.4	RC								
20	50.222									55	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 8	CO-ORDINATES: East: 1292.96	North: 4012.71
SITE LOCATION :	Boiler	START DATE: 6/15/2009	END DATE: 6/19/2009
GROUND REDUCED LEVEL:	71.121	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.65	CASING DIA:	150mm upto 3.00m & Nx from 3.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	70.921		Filled up soil										
1													
			Loose greyish Clayey sand with gravel.	1.5	UDS				Recovered	---	---		
2													
3	68.121			3	SPT	30			11cm in 100 blows N>100				
										40	20		
4				4	RC								
										80	0		
5			Highly to moderately weathered yellowish brown fine grained Sandstone.	5	RC								
										65	34		
6				6	RC								
										76	0		
7	64.121			7	RC								
			Highly weathered yellowish brown Siltstone.							47	0		
8	63.121			8	RC								
										52	12		
9			Highly to moderately weathered greyish fine grained Sandstone.	9	RC								
										61	28		
10													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 8	CO-ORDINATES: East: 1292.96	North: 4012.71
SITE LOCATION :	Boiler	START DATE: 6/15/2009	END DATE: 6/19/2009
GROUND REDUCED LEVEL:	71.121	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.65	CASING DIA:	150mm upto 3.00m & Nx from 3.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				10	RC					57	0		
11			Highly to moderately weathered greyish fine grained Sandstone. *(continued)*	11	RC					91	0		
12	61.121			12	RC					86	0		
13	58.121		Highly weathered greyish Siltstone with Sandstone patches	13	RC					90	19		
14	57.121		Highly weathered greyish Siltstone with clay patches.	14	RC					87	17		
15				15	RC					93	0		
16			Highly weathered greyish fine grained Sandstone.	16	RC					96	11		
17				17	RC					90	0		
18	53.121			18	RC					99	12		
19			Highly weathered greyish Siltstone with patches of SHALES.	19	RC					96	0		
20	51.121												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No: | PAGE 2 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 9	CO-ORDINATES: East: 1327.16	North: 4038.11
SITE LOCATION :	Boiler	START DATE: 5/4/2009	END DATE: 5/5/2009
GROUND REDUCED LEVEL:	71.323	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.6	CASING DIA:	150mm upto 3.50m & Nx from 3.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	71.123		Concrete filling										
1			Stiff blakish brown Sandyclay	1.5	UDS				Recovered	---	---		
2	69.223												
3			Medium dense brownish Siltysand	3	SPT	6	8	14	22	---	---		
	67.723			3.45	SPT				15 cm in 100 blows,N>100	---	---		
	67.623		Completely weathered brownish Sandstone	3.7	RC								
4										55	0		
5			Highly to moderately weathered light greyish fine to medium grained Sandstone	4.7	RC					64	64		
	65.623			5.7	RC								
6										76	75		
				6.7	RC								
7			Moderately to slightly weathered light greyish fine to medium grained Sandstone							78	70		
				7.7	RC								
8										77	40		
	62.623			8.7	RC								
9			Highly to moderately weathered greyish Siltstone with Sandstone patches							51	0		
				9.7	RC								
10										71	12		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash Checked by : S. Padhi

Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 9	CO-ORDINATES: East: 1327.16	North: 4038.11
SITE LOCATION :	Boiler	START DATE: 5/4/2009	END DATE: 5/5/2009
GROUND REDUCED LEVEL:	71.323	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.6	CASING DIA:	150mm upto 3.50m & Nx from 3.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Highly to moderately weathered greyish Siltstone with Sandstone patches *(continued)*	10.7	RC					71	12		
										75	11		
	59.623			11.7	RC								
12			Moderately weathered greyish fine to medium grained Sandstone							83	14		
	58.623			12.7	RC								
13			Highly to moderately weathered grey Siltstone							80	0		
	57.623			13.7	RC								
14			Highly to moderately weathered greyish Siltstone with fine grained Sandstone patches							72	10		
	56.623			14.7	RC								
15										80	0		
				15.7	RC								
16										79	0		
17			Highly to moderately weathered greyish greyish medium to coarse grained Sandstone(weak rock)	16.7	RC					74	0		
				17.7	RC								
18										80	0		
	52.623			18.7	RC								
19			Highly to moderately weathered greyish Siltstone(weak rock)							73	0		
				19.7									
20	51.323									83	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 10	CO-ORDINATES: East: 1418.78	North: 4011.11
SITE LOCATION :	Boiler	START DATE: 5/21/2009	END DATE: 5/28/2009
GROUND REDUCED LEVEL:	70.777	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1	CASING DIA:	150mm upto 3.00m & Nx from 3.00 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	69.277		Filled up soil consisting of Clay with Kankar & Gravel	1.5	UDS				Recovered	---	---		
2			Stiff greyish brown Clay with low plasticity										
3	67.777			3	SPT				15cm in 100 blows, N>100				
	67.657		Completely weathered deeply decomoposed Sandstone							63	32		
4			Moderately weathered yellowish brown fine grained Sandstone	4	RC					91	44		
5	65.777			5	RC								
6	64.777		Moderately weathered yellowish brown medium grained Sandstone	6	RC					90	26		
7	63.777		Moderately weathered light greyish Siltstone	7	RC					88	0		
8			Moderately weathered light greyish medium grained Sandstone	8	RC					90	0		
9				9	RC					90	0		
10	60.777									82	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 10	CO-ORDINATES: East: 1418.78	North: 4011.11
SITE LOCATION :	Boiler	START DATE: 5/21/2009	END DATE: 5/28/2009
GROUND REDUCED LEVEL:	70.777	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1	CASING DIA:	150mm upto 3.00m & Nx from 3.00 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				10	RC								
			Highly to moderately weathered light greyish Sandstone							91	0		
11	59.777			11	RC								
										86	0		
12			Highly to moderately weathered light greyish medium grained Sandstone	12	RC								
										90	0		
13	57.777			13	RC								
										85	0		
14				14	RC								
			Highly to moderately weathered light greyish to whitish fine grained Sandstone							91	0		
15				15	RC								
										82	0		
16	54.777			16	RC								
										85	0		
17			Highly to moderately weathered light greyish white Siltstone with patches of Sandstone	17	RC								
										55	0		
18	52.777			18	RC								
			Highly to moderately weathered light greyish medium greyish Sandstone							64	0		
19	51.777			19	RC								
			Highly to moderately weathered dark greyish fine grained Sandstone							80	11		
20													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 10	CO-ORDINATES: East: 1418.78	North: 4011.11
SITE LOCATION :	Boiler	START DATE: 5/21/2009	END DATE: 5/28/2009
GROUND REDUCED LEVEL:	70.777	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1	CASING DIA:	150mm upto 3.00m & Nx from 3.00 to 30.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				20	RC								
										82	0		
21				21	RC								
										74	0		
22			Highly to moderately weathered dark greyish fine grained Sandstone *(continued)*	22	RC								
										90	0		
23				23	RC								
										89	0		
24	46.777			24	RC								
			Highly to moderately weathered greyish brown fine grained Sandstone							85	0		
25	45.777			25	RC								
										59	13		
26			Mederately to slightly weathered greyish fine grained Sandstone	26	RC								
										90	33		
27	43.777			27	RC								
			Highly to moderately weathered greyish medium to coarse grained Sandstone.							73	0		
28	42.777			28	RC								
										73	0		
29			Highly to moderately weathered greyish fine grained Sandstone.	29	RC								
										92	22		
30	40.777												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No: | PAGE 3 OF 3

Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 11	CO-ORDINATES: East: 1490.41	North: 4013.42
SITE LOCATION :	Boiler	START DATE: 5/26/2009	END DATE: 5/28/2009
GROUND REDUCED LEVEL:	70.714	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.45	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1			Very dense yellowish brown Silty sand.	1.4	SPT	22	37	41	78	---	---		
2	68.714		Completely weathered yellowish brown Sandstone	3.1	SPT				10cm in 100 blows, N>100	---	---		
3	67.514			3.2									
4			Moderately to weathered light brown Siltstone	4.2						65	37		
5	65.514			5.2						70	41		
6			Silghtly weathered medium to coarse grained yellowish brown Sandstone	6.2						84	64		
7				7.2						82	68		
8	62.514			8.2						85	25		
9	61.514		Slighly weathered light greyish brown Siltstone.	9.2						82	55		
10			Moderately weathered yellowish brown medium grained Sandstone.							70	14		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No: | PAGE 1 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 11	CO-ORDINATES: East: 1490.41	North: 4013.42
SITE LOCATION :	Boiler	START DATE: 5/26/2009	END DATE: 5/28/2009
GROUND REDUCED LEVEL:	70.714	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.45	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
			Moderately weathered yellowish brown medium grained Sandstone. *(continued)*	10.2						70	14		
11	59.514			11.2						82	10		
12	58.514		Moderately weathered light greyish fine grained Sandstone.	12.2						90	26		
13				13.2						96	42		
14			Slightly weathered dark greyish medium grained Sandstone.	14.2						98	77		
15	55.514			15.2						90	47		
16	54.514		Slightly weathered dark greyish Siltstone.	16.2						90	42		
17	53.514		Slightly weathered light greyish coarse grained Sandstone.	17.2						91	74		
18			Slightly weathered light greyish fine grained Siltstone.	18.2						84	41		
19	51.514			19.2						90	59		
20	50.714		Slightly weathered light greyish medium grained Sandstone.							87	22		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
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Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 12	CO-ORDINATES: East: 1283.28	North: 4075.82
SITE LOCATION :	Boiler	START DATE: 6/22/2009	END DATE: 6/25/2009
GROUND REDUCED LEVEL:	71.798	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.85	CASING DIA:	150mm upto 2.20m & Nx from 2.20 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	71.348		Filled up soil										
1			Loose greyish brown Sandy Clay	1.5	UDS				Recovered	---	---		
2	69.598			2.2	SPT				9 cm in 100 blows.N>100	---	---		
	69.348		Completely weathered light yellowish brown Sandstone	2.45	RC								
3										51	20		
				3.45	RC								
4			Moderately weathered light yellowish brown fine grained Sandstone							80	65		
				4.45	RC								
5										89	81		
	66.348			5.45	RC								
6										99	99		
			Slightly weathered light greyish Siltstone	6.45	RC								
7										92	92		
	64.348			7.45	RC								
8										100	100		
			Slight weathered light to fresh greyish fine gained Sandstone	8.45	RC								
9										95	87		
	62.348			9.45	RC								
10			Slightly weathered to fresh greyish Siltstone to fine grained Sandstone patches							84	84		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash Checked by : S. Padhi

Job No: PAGE 1 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 12	CO-ORDINATES: East: 1283.28	North: 4075.82
SITE LOCATION :	Boiler	START DATE: 6/22/2009	END DATE: 6/25/2009
GROUND REDUCED LEVEL:	71.798	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.85	CASING DIA:	150mm upto 2.20m & Nx from 2.20 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Slightly weathered to fresh greyish Siltstone to fine grained Sandstone patches *(continued)*	10.45	RC					84	84		
				11.45	RC					98	98		
12										60	45		
	59.348			12.45	RC								
13			Highly weathered greyish Siltstone							54	0		
	58.348			13.45	RC								
14			Highly weathered greyish fine grained Sandstone							60	0		
	57.348			14.45	RC								
15			Moderately weathered greyish Siltstone							60	0		
				15.45	RC								
16										74	19		
	55.348			16.45	RC								
17			Moderately weathered greyish fine grained Sandstone							65	10		
				17.45	RC								
18										71	36		
	53.348			18.45	RC								
19			Slightly weathered greyish Siltstone							81	81		
				19.45	RC								
20	51.798									82	71		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
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Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 13	CO-ORDINATES: East: 1363.83	North: 4078.14
SITE LOCATION :	Boiler	START DATE: 5/5/2009	END DATE: 6/8/2009
GROUND REDUCED LEVEL:	71.701	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.85	CASING DIA:	150mm upto 1.90m & Nx from 1.90 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	70.701		Filled up Soil consisting of Clay with Boulders & Concrete pieces										
2	69.801		Very dense yellowish brown Clayey sand with boulder pieces	1.5	SPT				12 cm in 100 blows,N>100	---	---		
				1.9	RC					66	42		
3	68.801		Moderately weathered light brown medium grained Sandstone	2.9	RC					86	42		
4				3.9	RC					85	0		
5			Moderately to slightly weathered light yellowish brown Sandstone	4.9	RC					84	34		
6	65.801			5.9	RC					89	10		
7				6.9	RC					89	10		
8			Moderately to slightly weathered light greyish Siltstone with fine grained Sandstone patches	7.9	RC					95	13		
9				8.9	RC					95	0		
10				9.9	RC								

SPT N = STANDARD PENETRATION TEST VALUE
RC = ROCK CORE
RQD = ROCK QUALITY DESIGNATION
DS = DISTURBED SAMPLE
UDS = UNDISTURBED SOIL SAMPLE
VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 13	CO-ORDINATES: East: 1363.83	North: 4078.14
SITE LOCATION :	Boiler	START DATE: 5/5/2009	END DATE: 6/8/2009
GROUND REDUCED LEVEL:	71.701	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.85	CASING DIA:	150mm upto 1.90m & Nx from 1.90 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
										94	0		
										94	0		
11				10.9	RC								
										87	11		
12				11.9	RC								
			Moderately to slightly weathered light greyish Siltstone with fine grained Sandstone patches *(continued)*							90	0		
13				12.9	RC								
										88	0		
14				13.9	RC								
										85	15		
15	56.801			14.9	RC								
										89	30		
16			Slightly weathered greyish medium grained Sandstone	15.9	RC								
										85	79		
17	54.801			16.9	RC								
			Slightly weathered greyish coarse grained Sandstone							99	91		
18	53.801			17.9	RC								
										95	63		
19			Slightly weathered greyish Silt to fine grained Sandstone	18.9	RC								
										95	0		
20	51.701												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 14	CO-ORDINATES: East: 1451.3	North: 4044.21
SITE LOCATION :	Boiler	START DATE: 6/1/2009	END DATE: 4/6/2009
GROUND REDUCED LEVEL:	71.049	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.95	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	70.599		Filled up soil consisting of Clayey Sand										
1			Loose yellowish brown Silty Sand	1.5	UDS				Recovered	---	---		
2	69.049			2	RC								
										53	0		
3				3	RC								
			Moderately to slightly weathered medium to coarse grained light brown Sandstone							76	22		
4				4	RC								
										88	82		
5	66.049			5	RC								
										76	34		
6				6	RC								
			Highly to moderately weathered brownish to greyish fine to medium grained Sandstone							70	0		
7				7	RC								
										50	0		
8	63.049			8	RC								
			Highly weathered greyish Claystone with Siltstone patches							51	0		
9	62.049			9	SPT				11cm in 100 blowsN>100	---	---		
			Completely weathered,deeply decomposed greyish Siltstone										
10	61.049												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)
BOREHOLE ID: BH 14	CO-ORDINATES: East: 1451.3 North: 4044.21
SITE LOCATION : Boiler	START DATE: 6/1/2009 END DATE: 4/6/2009
GROUND REDUCED LEVEL: 71.049	DRILLING METHOD: Rotary
GROUND WATER TABLE DEPTH: 0.95	CASING DIA: 150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Completely weathered deeply decomposed,greyish Siltstone in the form Silty sand	11	SPT				11cm in 100 blowsN>100	---	---		
12				12	SPT				11cm in 100 blowsN>100	---	---		
13	58.049			13	SPT				10cm in 100 blowsN>100	---	---		
				13.1	RC					46	0		
14				14.1	RC					48	15		
15			Highly weathered dark greyish medium grained Sandstone	15.1	RC					62	0		
16				16.1	RC					47	0		
17	54.049			17.1	RC					58	29		
18			Highly to moderately weathered grey Siltstone	18.1	RC					60	0		
19	52.049			19.1						72	72		
20	51.049		Moderately weathered greyish fine grained sandstone										

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 15	CO-ORDINATES: East: 1477.91	North: 4075.6
SITE LOCATION :	Boiler	START DATE: 5/3/2009	END DATE: 6/3/2009
GROUND REDUCED LEVEL:	71.067	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.15	CASING DIA:	150mm upto 4.50m & Nx from 4.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	70.667		Fill up soil										
1													
2			Boulder pieces embeded in Clay	1.5	SPT				11cm in 100 blows N>100	---	---		
	68.267												
3				3	SPT	3	6	11	17	---	---		
4			Medium dense to very greyish Clayey Sand with Gravel										
	66.567			4.5	SPT	18	24	31	55	---	---		
5													
6			Very dense greyish Siltysand	6	SPT				13cm in 100 blows N>100	---	---		
7	64.067												
8	63.067		Completely weathered greyish Rock	7.5	SPT				12cm in 100 blows N>100	---	---		
				8	RC								
9	62.067		Highly weathered light greyish fine grained Sandstone	9	RC					56	10		
10			Highly weathered greyish fine to medium grained Sandstone							56	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 15	CO-ORDINATES: East: 1477.91	North: 4075.6
SITE LOCATION :	Boiler	START DATE: 5/3/2009	END DATE: 6/3/2009
GROUND REDUCED LEVEL:	71.067	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.15	CASING DIA:	150mm upto 4.50m & Nx from 4.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				10	RC								
										49	23		
11			Highly weathered greyish fine to medium grained Sandstone *(continued)*	11	RC								
										60	21		
12	59.067			12	RC								
			Moderately weathered brownish fine to medium grained Sandstone							61	39		
	58.367												
13			Moderately weathered light greyish Siltstone	13	RC								
	57.567									69	53		
14			Highly weathered brownish Siltstone to medium grained Sandstone	14	RC								
										48	15		
15	56.067			15	RC								
										56	0		
16			Highly to moderately weathered ,brownish with greyish medium to coarse grained Sandstone patch	16	RC								
										71	49		
17	54.067			17	RC								
			Highly weathered greyish fine to medium grained Sandstone							72	0		
18	53.067			18	RC								
			Highly to moderately weathered greyish Siltstone							84	21		
19	52.067			19	RC								
			Moderately weathered greyish medium grained Sandstone							70	13		
20	51.067												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No: | PAGE 2 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 16	CO-ORDINATES: East: 1270.53	North: 4118.82
SITE LOCATION :	ESP	START DATE: 6/15/2009	END DATE: 6/18/2009
GROUND REDUCED LEVEL:	72.520	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.9	CASING DIA:	150mm upto 3.70m & Nx from 3.70 to 20.9m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	71.02		Medium dense to very greyish Clayey Sand with Gravel	1.5	SPT				12cm in 100 blows N>100	---	---		
2	69.82		Completely weathered yellowish brown rock.	2.5	SPT				8cm in 100 blows N>100	---	---		
3				2.7	RC					65	44		
4				3.7	RC					80	54		
5				4.7	RC					95	78		
6				5.7	RC					83	27		
7				6.7	RC					94	0		
8				7.7	RC					87	0		
9			Slightly weathered greyish fine grained Sandstone.	8.7	RC					69	0		
10				9.7	RC					84	0		
11				10.7	RC					85	0		
12				11.7	RC					84	0		
13				12.7	RC					87	0		
14				13.7	RC					87	0		
15				14.7	RC					91	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 16	CO-ORDINATES: East: 1270.53	North: 4118.82
SITE LOCATION :	ESP	START DATE: 6/15/2009	END DATE: 6/18/2009
GROUND REDUCED LEVEL:	72.520	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.9	CASING DIA:	150mm upto 3.70m & Nx from 3.70 to 20.9m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
16				15.7	RC					91	0		
17				16.7	RC					91	0		
18			Slightly weathered greyish fine grained Sandstone. *(continued)*	17.7	RC					92	0		
19				18.7	RC					93	0		
20	52.52			19.7	RC					97	0		
				20	RC					74	0		
21										---	---		
22													
23													
24													
25													
26													
27													
28													
29													
30													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 17	CO-ORDINATES: East: 1325.4	North: 4148.92
SITE LOCATION :	ESP	START DATE: 6/25/2009	END DATE: 6/27/2009
GROUND REDUCED LEVEL:	72.109	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1	CASING DIA:	150mm upto 1.75m & Nx from 1.75 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth	SAMPLE	BLOWS/15cm 15	15	15	'N' Field	Core ecovery(%)	RQD (%)	Other Tests	REMARKS
1	71.259		Field of soil consisting of pebbles.										
			Completely weathered yellowish brown rock.	1.4	SPT	29			12cm in 100 blows N>100	---	---		
2	70.359			1.75	RC					84	62		
			Highly to moderately weathered light yellowish Siltstone to fine grained Sandstone.	2.75	RC					78	0		
3													
4	68.359			3.75	RC					95	0		
				4.75	RC					68	40		
5													
			Moderately to slightly weathered light greyish Siltstone to fine grained Sandstone.	5.75	RC					75	66		
6													
				6.75	RC					72	59		
7													
	64.359			7.75	RC					91	43		
8			Slightly weathered greyish fine grained Sandstone.										
	63.359			8.75	RC					99	43		
9			Slightly weathered greyish Siltstone										
10				9.75	RC					92	52		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 17	CO-ORDINATES: East: 1325.4	North: 4148.92
SITE LOCATION :	ESP	START DATE: 6/25/2009	END DATE: 6/27/2009
GROUND REDUCED LEVEL:	72.109	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1	CASING DIA:	150mm upto 1.75m & Nx from 1.75 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Slightly weathered greyish Siltstone *(continued)*	10.75	RC					92	52		
										90	90		
	60.359			11.75	RC								
12			Slightly weathered greyish Sandstone.							96	96		
13				12.75	RC					93	40		
	58.359			13.75	RC								
14			Slightly weathered greyish fine grained Sandstone.							99	99		
	57.359			14.75	RC								
15			Slightly weathered greyish Siltstone with clay paches.							90	82		
	56.359			15.75	RC								
16			Slightly weathered weathered greyish Siltstone.							99	99		
17				16.75	RC					96	96		
18				17.75	RC					93	88		
19				18.75	RC					97	97		
20	52.109												

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RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 17	CO-ORDINATES: East: 1325.4	North: 4148.92
SITE LOCATION :	ESP	START DATE: 6/25/2009	END DATE: 6/27/2009
GROUND REDUCED LEVEL:	72.109	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1	CASING DIA:	150mm upto 1.75m & Nx from 1.75 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE		BLOWS/15cm			'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				Sample Depth (m)	SAMPLE TYPE	15	15	15					
				20						---	---		
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 18	CO-ORDINATES: East: 1413.04	North: 4115.92
SITE LOCATION :	ESP	START DATE: 6/3/2009	END DATE: 6/4/2009
GROUND REDUCED LEVEL:	71.857	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 3.0m & Nx from 3.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	70.857		Field of soil consisting of clayey sand with gravel.										
				1.5	UDS				Recovered	---	---		
2			Stiff to hard brownish sandy clay with gravel.										
	69.157			2.7	SPT				10cm in 100 blows N>100	---	---		
3	68.757		Completely weathered deeply decomposed yellowish brown Sandstone.	3.1	RC								
										50	0		
4				4.1	RC								
										54	45		
5			Highly to moderately weathered fine to medium grained yellowish brown Sandstone.	5.1	RC								
										84	22		
6				6.1	RC								
										85	15		
7	64.757			7.1	RC								
			Moderately weathered light greyish fine to medium grained Sandstone.							85	0		
8	63.757			8.1	RC								
										92	0		
9			Moderately weathered light gray silt stone.	9.1	RC								
										95	0		
10													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:
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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 18	CO-ORDINATES: East: 1413.04	North: 4115.92
SITE LOCATION :	ESP	START DATE: 6/3/2009	END DATE: 6/4/2009
GROUND REDUCED LEVEL:	71.857	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 3.0m & Nx from 3.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	61.757			10.1	RC					93	51		
11				11.1	RC					85	58		
12			Slightly weathered dark greyish fine graind Sandstone.	12.1	RC					91	68		
13				13.1	RC					92	0		
14	57.757			14.1	RC					93	67		
15	56.757		Slightly weathered dark greyish fine to medium graind Sandstone.	15.1	RC					96	0		
16	55.757		Moderately weathered dark greyish medium to coarse graind Sandstone.	16.1	RC					96	0		
17			Moderately weathered greyish Siltstone.	17.1	RC					85	0		
18	53.757			18.1	RC					91	0		
19			Moderately weathered greyish medium grained Sandstone.	19.1	RC					85	0		
20	51.857												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
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Job No:
PAGE 2 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 19	CO-ORDINATES: East: 1502.29	North: 4113.5
SITE LOCATION :	ESP	START DATE: 6/8/2009	END DATE: 6/11/2009
GROUND REDUCED LEVEL:	71.574	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.55	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1			Medium stiff greyish sandy clay.										
				1.5	UDS				Recovered 13cm in 100 blows N>100	---	---		
2	69.574			2	SPT					---	---		
	69.424		Completely weathered deeply decomposed brownish to greyish Sandstone.	2.15	RC								
3			Moderately weathered brownish to greyish fine to medium grained Sandstone.							78	61		
	68.424			3.15	RC								
4			Moderately weathered greyish Siltstone.							78	44		
	67.424			4.15	RC								
5										84	58		
				5.15	RC								
6										96	96		
			Moderately to slightly weathered light greyish compacted fine to medium grained Sandstone.	6.15	RC								
7										82	48		
				7.15	RC								
8										91	63		
	63.424			8.15	RC								
9										75	40		
			Slightly weathered greyish fine grained Sandstone.	9.15	RC								
10										80	44		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 19	CO-ORDINATES: East: 1502.29	North: 4113.5
SITE LOCATION :	ESP	START DATE: 6/8/2009	END DATE: 6/11/2009
GROUND REDUCED LEVEL:	71.574	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.55	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	61.424			10.15	RC								
11			Slightly weathered greyish Siltstone.							90	22		
	60.424			11.15	RC								
										65	0		
12			Highly weathered dark greyish medium to coarse grained Sandstone.	12.15	RC								
										93	17		
13				13.15	RC								
	58.424												
			Highly weathered dark greyish fine grained Sandstone.							80	0		
14	57.424			14.15	RC								
	57.074		Dark greyish Siltstone.										
										83	0		
15				15.15	RC								
										70	0		
16				16.15	RC								
										76	0		
17			Highly weathered dark greyish medium to carse grained Sandstone.	17.15	RC								
										71	0		
18				18.15	RC								
										62	0		
19				19.15	RC								
										71	18		
20	51.574												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash Checked by : S. Padhi

Job No: PAGE 2 OF 2

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 20	CO-ORDINATES: East: 1263.41	North: 4184.35
SITE LOCATION :	ESP	START DATE: 6/23/2009	END DATE: 6/27/2009
GROUND REDUCED LEVEL:	72.319	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 1.50m & Nx from 1.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	72.019		Filled up soil										
			Greyish sand with pebbles.										
1	71.419												
			Completely weathered yellowish brown Sandstone.	1.5	SPT	28			11cm in 100 blows N>100	---	---		
	70.519			1.8	RC								
2			Moderately weathered light yellowish fine grained Sandstone.							79	21		
	69.519			2.8	RC								
3			Moderately weathered light greyish Siltstone.							85	56		
	68.519			3.8	RC								
4										91	78		
				4.8	RC								
5										100	100		
				5.8	RC								
6										96	76		
			Slightly weathered to fresh light greyish fine grained Siltstone	6.8	RC								
7										99	99		
				7.8	RC								
8										97	97		
				8.8	RC								
9										99	91		
				9.8	RC					96	94		
10													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 20	CO-ORDINATES: East: 1263.41	North: 4184.35
SITE LOCATION :	ESP	START DATE: 6/23/2009	END DATE: 6/27/2009
GROUND REDUCED LEVEL:	72.319	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 1.50m & Nx from 1.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Slightly weathered to fresh light greyish fine grained Siltstone *(continued)*	10.8	RC					96	94		
12				11.8	RC					97	86		
13	59.519			12.8	RC					95	95		
14			Slightly weathered greyish Siltstone.	13.8	RC					91	91		
15				14.8	RC					90	90		
16	56.519			15.8	RC					92	0		
17			Moderately weathered greyish fine grained Sandstone.	16.8	RC					86	0		
18	54.519			17.8	RC					93	0		
19			Moderately weathered greyish Siltstone.	18.8	RC					91	0		
20	52.319									80	0		

Borehole termination at 20 m

SPT N = STANDARD PENETRATION TEST VALUE
RC = ROCK CORE
RQD = ROCK QUALITY DESIGNATION
DS = DISTURBED SAMPLE
UDS = UNDISTURBED SOIL SAMPLE
VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 21	CO-ORDINATES: East: 1374.24	North: 4180.08
SITE LOCATION :	Chimney	START DATE: 6/20/2009	END DATE: 6/23/2009
GROUND REDUCED LEVEL:	72.092	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.1	CASING DIA:	150mm upto 2.10m & Nx from 2.10 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
0	71.442		Filled up soil										
1	70.592		Greyish brown Sandy clay with pebbles.	1.5	SPT	32			13cm in 100 blows N>100	---	---		
2	69.992		Completely weathered yellowish brown Sandstone.	2.1	RC								
3			Highly weathered yellowish fine grained Sandstone.	3.1	RC					85	13		
4	67.992			4.1	RC					93	0		
5	66.992		Highly weathered light greyish fine grained Sandstone.	5.1	RC					86	0		
6	65.992		Highly weathered light greyish medium grained Sandstone.	6.1	RC					90	0		
7			Highly weathered light greyish Siltstone to fine grained Sandstone.	7.1	RC					57	0		
8				8.1	RC					88	0		
9				9.1	RC					92	34		
10										90	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 21	CO-ORDINATES: East: 1374.24	North: 4180.08
SITE LOCATION :	Chimney	START DATE: 6/20/2009	END DATE: 6/23/2009
GROUND REDUCED LEVEL:	72.092	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.1	CASING DIA:	150mm upto 2.10m & Nx from 2.10 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	61.992			10.1	RC								
			Highly weathered greyish fine grained Sandstone.							92	0		
11	60.992			11.1	RC								
										74	10		
12			Highly weathered coarse grained Sandstone.	12.1	RC								
										58	0		
13	58.992			13.1	RC								
			Highly weathered greyish Siltstone with clay paches.							60	10		
14	57.992			14.1	RC								
			Moderately weathered greyish fine grained Sandstone.							82	50		
15	56.992			15.1	RC								
			Slightly weathered greyish fine grained Sandstone.							95	86		
16	55.992			16.1	RC								
										84	54		
17				17.1	RC								
			Moderately weathered light greyish Siltstone.							81	37		
18	53.992			18.1	RC								
										90	90		
19			Higly to moderately weathered greyish fine grained Sandstone.	19.1	RC								
										86	0		
20													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:
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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 21	CO-ORDINATES: East: 1374.24	North: 4180.08
SITE LOCATION :	Chimney	START DATE: 6/20/2009	END DATE: 6/23/2009
GROUND REDUCED LEVEL:	72.092	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.1	CASING DIA:	150mm upto 2.10m & Nx from 2.10 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				20.1	RC								
	51.292		Higly to moderately weathered greyish fine grained Sandstone. *(continued)*							86	0		
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No: PAGE 3 OF 3

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 22	CO-ORDINATES: East: 1451.54	North: 4151.98
SITE LOCATION :	Chimney	START DATE: 6/5/2009	END DATE: 6/8/2009
GROUND REDUCED LEVEL:	72.194	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.98	CASING DIA:	150mm upto 1.98m & Nx from 1.98 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	71.894		Filled up soil consisting of brick and concrete pieces										
1			Very dense yellowish brown clayey sand.	1	SPT	20	28	33	61	---	---		
	70.744												
2				2	SPT	38			10cm in 100 blows N>100	---	---		
3			Completely weathered deeply decomposed brownish Sandstone.										
	68.894			3.3	RC								
4										47	10		
				4.3	RC								
5										69	19		
				5.3	RC								
6			Highly to moderately weathered yellowish brown fine to medium grained Sandstone.							85	10		
				6.3	RC								
7										87	13		
				7.3	RC								
8										92	0		
	63.894			8.3	RC								
9										83	0		
			Highly weathered light greyish Siltstone	9.3	RC								
10										92	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
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Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 22	CO-ORDINATES: East: 1451.54	North: 4151.98
SITE LOCATION :	Chimney	START DATE: 6/5/2009	END DATE: 6/8/2009
GROUND REDUCED LEVEL:	72.194	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.98	CASING DIA:	150mm upto 1.98m & Nx from 1.98 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	61.894			10.3	RC					92	0		
11										92	0		
				11.3	RC								
12			Highly weathered light greyish medium grained Sandstone.							96	0		
				12.3	RC								
13										87	0		
	58.894			13.3	RC								
14			Highly weathered light greyish fine to medium grained Sandstone.							95	0		
	57.894			14.3	RC								
15			Highly weathered light greyish medium to coarse grained Sandstone.							77	14		
	56.894			15.3	RC								
16										78	39		
			Moderately to slightly weathered greyish Siltstone.	16.3	RC								
17										92	63		
	54.894			17.3	RC								
18										93	58		
			Slightly weathered greyish medium grained Sandstone.	18.3	RC								
19										88	37		
	52.894			19.3	RC								
20	52.194		Slightly weathered greyish Siltstone to fine grained Sandstone.							80	38		

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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 23	CO-ORDINATES: East: 1492.04	North: 4181.92
SITE LOCATION :	ESP	START DATE: 6/8/2009	END DATE: 6/10/2009
GROUND REDUCED LEVEL:	71.784	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.35	CASING DIA:	150mm upto 2.10m & Nx from 2.10 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	70.784		Filled up soil consisting at Clay with gravel										
				1.25	SPT				12cm in 100 blows N>100	---	---		
2	69.684		Completely weathered deeply decomposed brownish Sandstone.	2	SPT				10cm in 100 blows N>100	---	---		
				2.2	RC								
3			Highly weathered yellowish brown, medium to coarse grained Sandstone.							76	0		
	68.584			3.2	RC								
4			Highly weathered yellowish brown medium to fine grained Sandstone.	4.2	RC					78	0		
5										79	0		
	66.584			5.2	RC								
6			Highly to moderately weathered light yellowish brown medium to coarse grained Sandstone.	6.2	RC					86	12		
7										95	0		
				7.2	RC								
8				8.2	RC					95	0		
9										97	0		
				9.2	RC								
10										88	11		

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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 23	CO-ORDINATES: East: 1492.04	North: 4181.92
SITE LOCATION :	ESP	START DATE: 6/8/2009	END DATE: 6/10/2009
GROUND REDUCED LEVEL:	71.784	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.35	CASING DIA:	150mm upto 2.10m & Nx from 2.10 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Highly to moderately weathered light yellowish brown medium to coarse grained Sandstone. *(continued)*	10.2	RC					88	11		
	60.584									86	0		
				11.2	RC								
12			Moderately to slightly weathered greyish Siltstone.							90	68		
				12.2	RC								
13										92	28		
	58.584			13.2	RC								
14			Slightly weathered greyish medium grained Sandstone							85	57		
				14.2	RC								
	56.984									87	56		
15			Slightly weathered greyish Siltstone	15.2	RC								
	56.084									83	38		
16			Slightly weathered greyish fine to medium grained Sandstone										
	55.584			16.2	RC								
			Slightly weathered greyish Sandstone.							92	22		
17													
	54.584			17.2	RC								
			Greyish medium grained Sandstone.										
	54.084									92	25		
18			Greyish Siltstone.										
	53.584			18.2	RC								
										93	46		
19			Slightly weathered greyish medium grained Sandstone with some petches of Siltstone	19.2	RC					100	46		
20	51.784												

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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 24	CO-ORDINATES: East: 1293.53	North: 4225.03
SITE LOCATION :	ESP	START DATE: 6/19/2009	END DATE: 6/22/2009
GROUND REDUCED LEVEL:	72.383	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.85	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	72.183		Concrete pieces										
1			Very dense greyish silty gravel.	1	SPT	22	24	28	52				
	70.883									---	---		
2	70.383		Completely weathered yellowish brown Sandstone.	1.9	SPT				10cm in 100 blows N>100	---	---		
				2	RC					83	60		
3				3	RC								
			Highly to moderately weathered light yellowish fine to medium grained Sandstone.							85	12		
4				4	RC								
										93	12		
5	67.383			5	RC								
										90	29		
6			Highly to moderately weathered light yellowish Siltstone	6	RC								
										80	10		
7	65.383			7	RC								
			Highly to moderately weathered light greyish fine grained Sandstone.							90	37		
8	64.383			8	RC								
			Highly weathered light greyish fine grained Sandstone.							85	0		
9	63.383			9	RC								
			Highly weathered greyish Siltstone.							90	11		
10													

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ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 24	CO-ORDINATES: East: 1293.53	North: 4225.03
SITE LOCATION :	ESP	START DATE: 6/19/2009	END DATE: 6/22/2009
GROUND REDUCED LEVEL:	72.383	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	0.85	CASING DIA:	150mm upto 2.00m & Nx from 2.00 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
10				10	RC								
										91	0		
11			Highly weathered greyish Siltstone. *(continued)*	11	RC								
										84	34		
12	60.383			12	RC								
										82	58		
13				13	RC								
										84	22		
14				14	RC								
										85	20		
15				15	RC								
										49	0		
16			Highly to moderately weathered light yellowish fine to medium grained Sandstone.	16	RC								
										84	0		
17				17	RC								
										85	0		
18				18	RC								
										90	0		
19				19	RC								
										90	0		
20	52.383												

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RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 25	CO-ORDINATES: East: 1386.16	North: 4272.92
SITE LOCATION :	ESP	START DATE: 6/24/2009	END DATE: 6/29/2009
GROUND REDUCED LEVEL:	73.157	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 2.50m & Nx from 2.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
0	72.657		Fill up soil with kankar.										
1			Greyish sandy clay	1.5	UDS				Recovered	---	---		
2	70.657			2.5	SPT				13cm in 100 blow N>100	---	---		
	70.527		Completely weathered yellowish brown Sandstone.	2.65	RC					84	33		
3				3.65	RC								
4			Highly to moderately weathered yellowish brown fine Sandstone.							87	0		
				4.65	RC								
5										91	21		
	67.507			5.65	RC								
6										90	22		
			Highly to moderately weathered light greyish fine grained Sandstone.	6.65	RC								
7										87	0		
	65.507			7.65	RC								
8			Highly to moderately weathered yellowish brown fine grained Sandstone to greyish Siltstone.							91	0		
	64.507			8.65	RC								
9			Moderately to slightly weathered yellowish brown fine grained Sandstone.							92	42		
				9.65	RC								
10										84	12		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
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ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No:

Borehole termination at 30 m

CLIENT:	NTPC
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)
BOREHOLE ID: BH 25	CO-ORDINATES: East: 1386.16 North: 4272.92
SITE LOCATION : ESP	START DATE: 6/24/2009 END DATE: 6/29/2009
GROUND REDUCED LEVEL: 73.157	DRILLING METHOD: Rotary
GROUND WATER TABLE DEPTH: 1.05	CASING DIA: 150mm upto 2.50m & Nx from 2.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
11			Moderately to slightly weathered yellowish brown fine grained Sandstone. *(continued)*	10.65	RC					84	12		
				11.65	RC					92	14		
12										92	21		
	60.507			12.65	RC								
13			Slightly weathered dark greyish Siltstone with patches of SHALE.							93	72		
	59.507			13.65	RC								
14			Highly to moderately weathered greyish Siltstone							99	0		
15				14.65	RC					94	13		
	57.507			15.65	RC								
16			Highly to moderately weathered dark greyish fine grained Sandstone.							80	11		
	56.507			16.65	RC								
17										81	0		
				17.65	RC								
18			Highly to moderately weathered dark greyish Siltstone.							94	0		
				18.65	RC								
19										70	12		
				19.65	RC								
20										78	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 25	CO-ORDINATES: East: 1386.16	North: 4272.92
SITE LOCATION :	ESP	START DATE: 6/24/2009	END DATE: 6/29/2009
GROUND REDUCED LEVEL:	73.157	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.05	CASING DIA:	150mm upto 2.50m & Nx from 2.50 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
										78	0		
				20.65	RC								
21										90	0		
				21.65	RC								
22										82	0		
				22.65	RC								
23										89	0		
				23.65	RC								
24										90	0		
				24.65	RC								
25			Highly to moderately weathered dark greyish Siltstone. *(continued)*							92	0		
				25.65	RC								
26										80	0		
				26.65	RC								
27										87	0		
				27.65	RC								
28										88	0		
				28.65	RC								
29										91	0		
				29.65	RC								
30	43.157									84	0		

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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Borehole termination at 30 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 26	CO-ORDINATES: East: 1476.59	North: 4225.03
SITE LOCATION :	Chimney	START DATE: 6/6/2009	END DATE: 6/10/2009
GROUND REDUCED LEVEL:	72.30	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.4	CASING DIA:	150mm upto 2.40m & Nx from 2.40 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1	70.8		Brownish to brownish sandy clay	1	UDS				Recovered	---	---		
2			Very dense yellowish clayey sand with gravel.	2.4	SPT	30			12cm in 100 blows N>100	---	---		
3	69.3			3	RC								
4	68.3		Highly weathered yellowish brown medium grained Sandstone.	4	RC					46	34		
5			Moderately weathered yellowish brown coarse grained Sandstone.	5	RC					51	35		
6	66.5			5.8	RC					65	15		
	66.1		Moderately weathered brownish Siltstone.	6	RC					60	30		
7			Moderately weathered light brown filled spathic Sandstone.	7	RC					57	0		
8	63.8			8	RC					71	14		
9	62.8		Moderately weathered with coarse grained Sandstone patches of clay.	9	RC					68	31		
10	62.3		Moderately weathered light brown Siltstone.							70	0		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 26	CO-ORDINATES: East: 1476.59	North: 4225.03
SITE LOCATION :	Chimney	START DATE: 6/6/2009	END DATE: 6/10/2009
GROUND REDUCED LEVEL:	72.30	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	1.4	CASING DIA:	150mm upto 2.40m & Nx from 2.40 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				10	RC								
11	61.3		Highly weathered greyish Siltstone to fine grained Sandstone.							72	0		
				11	RC								
12	60.3		Highly weathered light brown medium grained Sandstone.							74	0		
				12	RC								
13										73	0		
				13	RC								
14	58.3		Highly weathered greyish medium grained Sandstone.							85	0		
				14	RC								
15	57.3		Highly weathered greyish Siltstone.							75	0		
				15	RC								
										78	22		
16				16	RC								
										80	21		
17				17	RC								
			Highly to moderately weathered greyish fine grained Sandstone.							87	0		
18				18	RC								
										82	10		
19				19	RC								
										---	---		
20	52.3												

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

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Borehole termination at 20 m

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.136 m **EAST:** E or X = 1381.14 **NORTH:** N or Y = 3813.05

TYPE OF BORING: Rotary **BORING NO:** BH 42

DIAMETER OF BORING: 150mm upto 4.30m & Nx from 4.30m to 20.00m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Switch Yard **DATE STARTED:** 20/7/09 **COMPLETED:** 30/7/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0			Medium stiff to stiff yellowish to greyish Clay													
				1.5	UDS	1	---	---	---					---		
1																
2																
				3	SPT	1	3	4	4	8				---		
3																
4	65.136			4	SPT	2	36	100	---	N > 100				---		
	64.836		Completely weathered brownish Sandstone	4.3	RC		---	---	---				73	0		
			Highly to moderately weathered brownish fine grained Sandstone													
5				5.3	RC		---	---	---				71	0		
6				6.3	RC		---	---	---				77	0		
7				7.3	RC		---	---	---				92	0		
8																
	60.836			8.3	RC		---	---	---				78	0		
			Highly to moderately weathered greyish fine grained Sandstone													
9				9.3	RC		---	---	---				81	10		
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.136 m **EAST:** E or X = 1381.14 **NORTH:** N or Y = 3813.05

TYPE OF BORING: Rotary **BORING NO:** BH 42

DIAMETER OF BORING: 150mm upto 4.30m & Nx from 4.30m to 20.00m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Switch Yard **DATE STARTED:** 20/7/09 **COMPLETED:** 30/7/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10	58.836		Moderately weathered greyish coarse to fine grained Sandstone consisting of pink feldspar& purple bands	10.3	RC		---	---	---				86	11		
11				11.3	RC		---	---	---				79	23		
12	56.836		Moderately weathered greyish coarse grained Sandstone to Shale with light pink laminations	12.3	RC		---	---	---				87	25		
13	55.836		Moderately weathered greyish Shale	13.3	RC		---	---	---				86	11		
14	54.836		Highly to moderately weathered greyish Siltstone with some portions Shale	14.3	RC		---	---	---				72	0		
15				15.3	RC		---	---	---				83	10		
16	52.836		Moderately weathered greyish, medium to coarse grained Sandstone with pink feldspar	16.3	RC		---	---	---				84	11		
17	51.836		Highly to moderately weathered greyish Siltstone	17.3	RC		---	---	---				85	32		
18				18.3	RC		---	---	---				90	0		
19	49.836		Highly to moderately weathered coarse grained Sandstone with laminated Shale	19.3	RC		---	---	---				52	0		
20	49.136															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.962 m **EAST:** E or X = 1252.77 **NORTH:** N or Y = 4320.05

TYPE OF BORING: Rotary **BORING NO:** BH 49

DIAMETER OF BORING: 150mm upto 1.20m & Nx from 1.20 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Track Hopper **DATE STARTED:** 5/8/09 **COMPLETED:** 7/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0																
1	71.062		Stiff greyish Clayey Sand (SC)	0.9	SPT	1	38	---	---	11cm in 100 blows N>100	▼			---		
	70.762		Completely weathered brownish Sandstone	1.2	RC	1	---	---	---							
2			Highly to moderately weathered yellowish brown fine to medium grained Sandstone	2.2	RC	2	---	---	---				65	0		
3				3.2	RC	3	---	---	---				81	11		
4				4.2	RC	4	---	---	---				83	0		
5				5.2	RC	5	---	---	---				91	14		
	66.762		Moderately weathered light greyish Siltstone	6.2	RC	6	---	---	---				84	21		
6	65.762		Highly to moderately weathered greyish fine grained Sandstone													
7				7.2	RC	7	---	---	---				88	62		
8				8.2	RC	8	---	---	---				89	80		
9													80	0		
	62.762		Highly to moderately weathered greyish Siltstone	9.2	RC	9	---	---	---				88	79		
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.962 m **EAST:** E or X = 1252.77 **NORTH:** N or Y = 4320.05

TYPE OF BORING: Rotary **BORING NO:** BH 49

DIAMETER OF BORING: 150mm upto 1.20m & Nx from 1.20 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Track Hopper **DATE STARTED:** 5/8/09 **COMPLETED:** 7/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Highly to moderately weathered greyish Siltstone *(continued)*	10.2	RC	10	---	---	---				88	79		
													88	26		
11				11.2	RC	11	---	---	---							
													87	0		
12	59.762			12.2	RC	12	---	---	---							
			Highly to moderately weathered greyish fine grained Sandstone										84	0		
13	58.762			13.2	RC	13	---	---	---							
			Highly to moderately weathered greyish Siltstone										86	0		
14	57.762			14.2	RC	14	---	---	---							
			Highly to moderately weathered greyish medium grained Sandstone										89	0		
15				15.2	RC	15	---	---	---							
													91	0		
16				16.2	RC	16	---	---	---							
													86	0		
17				17.2	RC	17	---	---	---							
													83	10		
18				18.2	RC	18	---	---	---							
													88	0		
19	52.762			19.2	RC	19	---	---	---							
			Highly to moderately weathered greyish Siltstone										84	0		
20	51.962															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.826 m **EAST:** E or X = 1377.25 **NORTH:** N or Y = 4331.52

TYPE OF BORING: Rotary **BORING NO:** BH 50

DIAMETER OF BORING: 150mm upto 1.70m & Nx from 1.70 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: AUX Boiler **DATE STARTED:** 4/8/09 **COMPLETED:** 5/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0																
			Greyish Sandy Clay (CI)													
1																
	70.426			1.4	SPT	1	32	---	---	10cm in 100blows N>100				---		
	70.126		Completely weathered deeply decomposed brownish Sandstone	1.7	RC		---	---	---							
2			Highly to moderately weathered reddish brown to greyish brown fine to coarse grained Sandstone										71	23		
				2.7	RC		---	---	---							
3													69	14		
				3.7	RC		---	---	---							
4													74	46		
				4.7	RC		---	---	---							
5													82	15		
				5.7	RC		---	---	---							
6													86	37		
	65.126			6.7	RC		---	---	---							
7			Moderately to slightly weathered greyish Siltstone										89	35		
				7.7	RC		---	---	---							
8													91	45		
				8.7	RC		---	---	---							
9													91	55		
	62.126			9.7	RC		---	---	---							
10													93	72		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.826 m **EAST:** E or X = 1377.25 **NORTH:** N or Y = 4331.52

TYPE OF BORING: Rotary **BORING NO:** BH 50

DIAMETER OF BORING: 150mm upto 1.70m & Nx from 1.70 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: AUX Boiler **DATE STARTED:** 4/8/09 **COMPLETED:** 5/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Slightly weathered greyish fine grained Sandstone *(continued)*										93	72		
	61.126		Slightly weathered greyish Siltstone	10.7	RC		---	---	---							
11													92	92		
				11.7	RC		---	---	---							
12													94	89		
	59.126		Moderately to slightly weathered greyish Siltstone with fine grained Sandstone patches	12.7	RC		---	---	---							
13													93	42		
				13.7	RC		---	---	---							
14													97	37		
				14.7	RC		---	---	---							
15													95	23		
	56.126		Moderately to slightly weathered greyish Siltstone with fine grained Sandstone patches	15.7	RC		---	---	---							
16													90	53		
				16.7	RC		---	---	---							
17													90	11		
				17.7	RC		---	---	---							
18													91	24		
				18.7	RC		---	---	---							
19													95	10		
20	51.826															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.887 m **EAST:** E or X = 1457.05 **NORTH:** N or Y = 4330.21

TYPE OF BORING: Rotary **BORING NO:** BH 51

DIAMETER OF BORING: 150mm upto 2.30m & Nx from 2.30 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: ASH Silo **DATE STARTED:** 31/7/09 **COMPLETED:** 5/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0			Greyish Sandy clay (Cl)													
				1.5	UDS	1	---	---	---	Recovered				---		
2	69.887			2	SPT	1	---	---	---	14cm in 100 blows N>100				---		
	69.587		Completely weathered deeply decomposed yellowish brown Sandstone	2.3	RC		---	---	---							
3			Highly weathered yellowish brown Sandstone										41	0		
				3.3	RC		---	---	---							
4													41	0		
	67.587			4.3	RC		---	---	---							
			Highly weathered yellowish Siltstone													
5													43	0		
	66.587			5.3	RC		---	---	---							
			Highly weathered yellowish Sandstone													
6													46	13		
				6.3	RC		---	---	---							
7													49	10		
				7.3	RC		---	---	---							
8													58	22		
	63.587			8.3	RC		---	---	---							
			Highly to moderately weathered greyish Sandstone													
9													61	12		
	62.587			9.3	RC		---	---	---							
			Highly to moderately weathered greyish Siltstone													
10													74	0		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.887 m **EAST:** E or X = 1457.05 **NORTH:** N or Y = 4330.21

TYPE OF BORING: Rotary **BORING NO:** BH 51

DIAMETER OF BORING: 150mm upto 2.30m & Nx from 2.30 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: ASH Silo **DATE STARTED:** 31/7/09 **COMPLETED:** 5/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10	61.587		Highly to moderately weathered greyish fine grained Sandstone	10.3	RC		---	---	---				74	0		
													63	0		
11				11.3	RC		---	---	---							
													78	12		
12				12.3	RC		---	---	---							
													68	23		
13	58.587		Highly to moderately weathered greyish Siltstone	13.3	RC		---	---	---							
													63	0		
14	57.587		Highly to moderately weathered greyish Siltstone with Sandstone patches	14.3	RC		---	---	---							
													73	0		
15				15.3	RC		---	---	---							
													66	0		
16				16.3	RC		---	---	---							
													64	10		
17	54.587		Highly to moderately weathered greyish Sandstone with Siltstone patches	17.3	RC		---	---	---							
													62	0		
18				18.3	RC		---	---	---							
													63	0		
19	52.587		Highly to moderately weathered greyish Shale	19.3	RC		---	---	---							
													58	0		
20	51.887															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.108 m **EAST:** E or X = 1293.585 **NORTH:** N or Y = 4403.211

TYPE OF BORING: Rotary **BORING NO:** BH 52

DIAMETER OF BORING: 150mm upto 3.30m & Nx from 3.30 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: FO Tank **DATE STARTED:** 6/8/09 **COMPLETED:** 8/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0																
1			Greyish brown Clayey Sand (SC)								▼					
				1.5	UDS	1	---	---	---	Recovered				---		
2																
3	68.108			3	SPT	1	40	---	---	12cm in 100 blows N>100				---		
	67.808		Completely weathered deeply decomposed Yellowish brown Sandstone	3.3	RC		---	---	---				70	23		
4			Highly to moderately weathered yellowish brown fine grained Sandstone	4.3	RC		---	---	---				81	72		
5				5.3	RC		---	---	---				85	70		
6				6.3	RC		---	---	---				82	46		
7				7.3	RC		---	---	---				91	49		
8	62.808			8.3	RC		---	---	---				84	0		
			Highly to moderately weathered greyish fine grained Sandstone													
9	61.808			9.3	RC		---	---	---				87	34		
			Moderately weathered greyish Siltstone													
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.108 m **EAST:** E or X = 1293.585 **NORTH:** N or Y = 4403.211

TYPE OF BORING: Rotary **BORING NO:** BH 52

DIAMETER OF BORING: 150mm upto 3.30m & Nx from 3.30 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: FO Tank **DATE STARTED:** 6/8/09 **COMPLETED:** 8/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Moderately weathered greyish Siltstone *(continued)*	10.3	RC		---	---	---				84	84		
11	59.808		Highly to moderately weathered greyish Siltstone with Small patches of fine grained Sandstone	11.3	RC		---	---	---				86	11		
12				12.3	RC		---	---	---				88	32		
13				13.3	RC		---	---	---				89	20		
14				14.3	RC		---	---	---				86	0		
15				15.3	RC		---	---	---				85	10		
16				16.3	RC		---	---	---				89	0		
17				17.3	RC		---	---	---				87	27		
18				18.3	RC		---	---	---				96	29		
19	51.808		Slightly weathered greyish Siltstone with Small amount of fine grained Sandstone	19.3	RC		---	---	---				98	98		
20	51.108															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.163 m **EAST:** E or X = 1364.14 **NORTH:** N or Y = 4400.57

TYPE OF BORING: Rotary **BORING NO:** BH 53

DIAMETER OF BORING: 150mm upto 2.50m & Nx from 2.50 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: FO Tank **DATE STARTED:** 7/8/09 **COMPLETED:** 10/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0			Medium stiff brownish Clayey Sand (SC)													
1																
				1.5	UDS	1	---	---	---	Recovered				---		
2	68.963			2.2	SPT	1	38	---	---	11cm in 100 blows N>100				---		
	68.663		Completely weathered brownish Siltstone	2.5	RC		---	---	---				66	20		
3			Highly to moderately weathered yellowish brown Siltstone													
	67.663			3.5	RC		---	---	---				87	79		
4			Slightly weathered yellowish brown Sandstone													
	66.663			4.5	RC		---	---	---				88	80		
5			Slightly weathered yellowish brown Siltstone													
				5.5	RC		---	---	---				83	60		
6																
	64.663			6.5	RC		---	---	---				89	68		
7			Slightly weathered yellowish brown fine grained Sandstone													
	63.663			7.5	RC		---	---	---				94	42		
8			Slightly weathered greyish Siltstone with Sandstone patches													
				8.5	RC		---	---	---				93	93		
9																
				9.5	RC		---	---	---				93	88		
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.163 m **EAST:** E or X = 1364.14 **NORTH:** N or Y = 4400.57

TYPE OF BORING: Rotary **BORING NO:** BH 53

DIAMETER OF BORING: 150mm upto 2.50m & Nx from 2.50 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: FO Tank **DATE STARTED:** 7/8/09 **COMPLETED:** 10/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10	60.663		Slightly weathered greyish Sandstone	10.5	RC		---	---	---				96	80		
11				11.5	RC		---	---	---				95	72		
12				12.5	RC		---	---	---				95	44		
13				13.5	RC		---	---	---				97	96		
14	56.663		Moderately to Slightly weathered greyish Siltstone	14.5	RC		---	---	---				95	0		
15				15.5	RC		---	---	---				92	0		
16				16.5	RC		---	---	---				96	10		
17				17.5	RC		---	---	---				95	35		
18	52.663		Moderately to Slightly weathered greyish Sandstone	18.5	RC		---	---	---				86	0		
19				19.5	RC		---	---	---				80	0		
20	51.163															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.057 m **EAST:** E or X = 1226.91 **NORTH:** N or Y = 4500

TYPE OF BORING: Rotary **BORING NO:** BH 54

DIAMETER OF BORING: 150mm upto 1.50m & Nx from 1.50 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 13/8/09 **COMPLETED:** 18/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0																
			Greyish Clayey Sand (SC)													
1																
	69.757			1.3	SPT	1	35	---	---	4cm in 100blows N>100	▼			---		
	69.557		Completely weathered deeply decomposed yellowish brown Sandstone	1.5	RC	1	---	---	---							
2			Highly to moderately weathered yellowish brown Sandstone										66	10		
				2.5	RC	2	---	---	---							
3													78	0		
	67.557			3.5	RC	3	---	---	---							
			Slightly weathered greyish Sandstone													
4													87	29		
				4.5	RC	4	---	---	---							
5													91	34		
				5.5	RC	5	---	---	---							
6													94	94		
				6.5	RC	6	---	---	---							
7													89	89		
				7.5	RC	7	---	---	---							
8													85	47		
	62.557			8.5	RC	8	---	---	---							
			Highly to moderately weathered greyish Siltstone													
9													83	0		
				9.5	RC	9	---	---	---							
10													77	20		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.057 m **EAST:** E or X = 1226.91 **NORTH:** N or Y = 4500

TYPE OF BORING: Rotary **BORING NO:** BH 54

DIAMETER OF BORING: 150mm upto 1.50m & Nx from 1.50 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 13/8/09 **COMPLETED:** 18/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10	60.557		Highly to moderately weathered greyish Sandstone	10.5	RC	10	---	---	---				77	20		
11				11.5	RC	11	---	---	---				84	0		
12				12.5	RC	12	---	---	---				85	0		
13				13.5	RC	13	---	---	---				80	0		
14	56.557		Highly to moderately weathered greyish Sandstone	14.5	RC	14	---	---	---				84	0		
15				15.5	RC	15	---	---	---				84	0		
16				16.5	RC	16	---	---	---				84	0		
17				17.5	RC	17	---	---	---				79	0		
18				18.5	RC	18	---	---	---				85	0		
19				19.5	RC	19	---	---	---				82	0		
20	51.057												86	0		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 73.928 m **EAST:** E or X = 1170.952 **NORTH:** N or Y = 4431.048

TYPE OF BORING: Rotary **BORING NO:** BH 55

DIAMETER OF BORING: 150mm upto 4.25m & Nx from 4.25 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 7/8/09 **COMPLETED:** 12/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0																
1			Filled up Soil								▼					
	72.428			1.5	UDS	1	---	---	---	Recovered				---		
2			Greyish Clayey Sand (SC)													
3				3	SPT	1	3	4	6	10				---		
	70.428															
4			Completely weathered yellowish brown Sandstone	3.9	SPT	2	46	---	---	9cm in 100 blows N>100				---		
	69.678			4.25	RC	1	---	---	---							
5			Moderately to slightly weathered greyish fine grained Sandstone Stone										86	29		
				5.25	RC	2	---	---	---							
6													95	70		
	67.678			6.25	RC	3	---	---	---							
7			Slightly weathered greyish fine grained Sandstone										96	80		
	66.678			7.25	RC	4	---	---	---							
8			Slightly weathered greyish Siltstone										85	76		
				8.25	RC	5	---	---	---							
9													87	47		
				9.25	RC	6	---	---	---							
10													89	88		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 73.928 m **EAST:** E or X = 1170.952 **NORTH:** N or Y = 4431.048

TYPE OF BORING: Rotary **BORING NO:** BH 55

DIAMETER OF BORING: 150mm upto 4.25m & Nx from 4.25 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 7/8/09 **COMPLETED:** 12/8/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10	63.678		Slightly weathered greyish Siltstone with Shale	10.25	RC	7	---	---	---				89	88		
11				11.25	RC	8	---	---	---				93	62		
12	61.678		Slightly weathered greyish Shale with Sandstone	12.25	RC	9	---	---	---				86	80		
13	60.678		Moderately to Slightly weathered greyish fine to medium grained Sandstone	13.25	RC	10	---	---	---				86	58		
14				14.25	RC	11	---	---	---				89	75		
15	58.678		Slightly weathered greyish laminated Shale	15.25	RC	12	---	---	---				89	12		
16	57.678		Moderately to Slightly weathered greyish Siltstone	16.25	RC	13	---	---	---				89	33		
17				17.25	RC	14	---	---	---				87	26		
18				18.25	RC	15	---	---	---				86	47		
19				19.25	RC	16	---	---	---				87	11		
20	53.928												81	32		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 73.926 m **EAST:** E or X = 1077.728 **NORTH:** N or Y = 4523.986

TYPE OF BORING: Rotary **BORING NO:** BH 70

DIAMETER OF BORING: 150mm upto 4.60m & Nx from 4.60 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 1/9/09 **COMPLETED:** 5/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0																
	73.326		Filled up Soil & concrete													
1			Filled up Ash dust													
				1.5	SPT	1	2	3	6	9				---		
2	71.926		Greyish coloured Clay								▼					
3				3	UDS	1	---	---	---	Recovered				---		
	70.426			3.5	SPT	2	28	---	---	13cm in 100 blows N >100				---		
4			Completely weathered Siltstone of yellowish grey colour													
	69.326			4.5	SPT	2	---	---	---	10cm in 100 blows N >100				---		
			Moderately weathered yellowish coloured Siltstone	4.6	RC	1	---	---	---							
5													76	0		
				5.6	RC	2	---	---	---							
6													80	0		
	67.326			6.6	RC	3	---	---	---							
7			Moderately weathered grey coloured Siltstone										84	0		
				7.6	RC	4	---	---	---							
8													83	0		
				8.6	RC	5	---	---	---							
9													85	0		
				9.6	RC	6	---	---	---							
10													86	23		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 73.926 m **EAST:** E or X = 1077.728 **NORTH:** N or Y = 4523.986

TYPE OF BORING: Rotary **BORING NO:** BH 70

DIAMETER OF BORING: 150mm upto 4.60m & Nx from 4.60 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 1/9/09 **COMPLETED:** 5/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Moderately weathered grey coloured Siltstone *(continued)*													
				10.6	RC	7	---	---	---				86	23		
11													85	0		
	62.326			11.6	RC	8	---	---	---							
12			Slightly weathered grey coloured Siltstone with fine grained Sandstone patches.										86	0		
				12.6	RC	9	---	---	---							
13													85	13		
				13.6	RC	10	---	---	---							
14													97	0		
				14.6	RC	11	---	---	---							
15													91	0		
				15.6	RC	12	---	---	---							
16													95	12		
				16.6	RC	13	---	---	---							
17													93	29		
				17.6	RC	14	---	---	---							
18													91	0		
				18.6	RC	15	---	---	---							
19													94	0		
				19.6	RC	16	---	---	---							
20	53.926												100	0		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.668 m **EAST:** E or X = 1253.37 **NORTH:** N or Y = 4427.7

TYPE OF BORING: Rotary **BORING NO:** BH 71

DIAMETER OF BORING: 150mm upto 1.30m & Nx from 1.30 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 4/9/09 **COMPLETED:** 5/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0	71.268		Filled up Concrete													
			Completely weathered yellowish brown Siltstone	1	SPT	1	38	---	---	12cm in 100 blows N >100				---		
1				1.3	RC		---	---	---							
2											▼		84	0		
				2.3	RC		---	---	---							
3													88	74		
	68.368			3.3	RC		---	---	---							
4			Slightly weathered grey coloured fine grained Sandstone										100	72		
	67.368			4.3	RC		---	---	---							
5			Slightly weathered grey coloured Shale & Siltstone										95	79		
	66.368			5.3	RC		---	---	---							
6			Slightly weathered grey coloured Siltstone with Fine grained Sandstone patches										91	13		
	65.368			6.3	RC		---	---	---							
7			Slightly weathered grey coloured fine grained Sandstone										98	36		
	64.368			7.3	RC		---	---	---							
8			Slightly weathered dark grey Siltstone										97	74		
	63.368			8.3	RC		---	---	---							
9			Slightly weathered dark grey fine grained Sandstone with some light grey coloured Shale										96	72		
	62.368			9.3	RC		---	---	---							
10			Slightly weathered grey coloured Siltstone										98	98		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.668 m **EAST:** E or X = 1253.37 **NORTH:** N or Y = 4427.7

TYPE OF BORING: Rotary **BORING NO:** BH 71

DIAMETER OF BORING: 150mm upto 1.30m & Nx from 1.30 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 4/9/09 **COMPLETED:** 5/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Slightly weathered grey coloured Siltstone *(continued)*	10.3	RC		---	---	---				98	98		
11													96	90		
	60.368			11.3	RC		---	---	---							
			Slightly weathered grey coloured Siltstone with Fine grained Sandstone patches										97	97		
12	59.368			12.3	RC		---	---	---							
			Slightly weathered grey coloured fine grained Siltstone with Sandstone patches										97	32		
13	58.368			13.3	RC		---	---	---							
			Slightly weathered grey coloured Siltstone										93	25		
14				14.3	RC		---	---	---							
													93	77		
15				15.3	RC		---	---	---							
													97	81		
16				16.3	RC		---	---	---							
													96	44		
17	54.368			17.3	RC		---	---	---							
			Slightly weathered grey coloured fine grained Sandstone with Siltstone patches.										93	93		
18	53.368			18.3	RC		---	---	---							
			Grey coloured Siltstone										100	100		
19				19.3	RC		---	---	---							
													100	100		
20	51.668															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

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PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.762 m **EAST:** E or X = 1252.92 **NORTH:** N or Y = 4382.05

TYPE OF BORING: Rotary **BORING NO:** BH 72

DIAMETER OF BORING: 150mm upto 1.60m & Nx from 1.60 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 31/8/09 **COMPLETED:** 3/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0	71.262		Filled up soil													
1	70.162		Completely weathered dirty yellow weathered Siltstone	1.5	SPT	1	---	---	---	10cm in 100 blows N >100				---		
2			Moderately weathered dirty yellow Siltstone	1.6	RC		---	---	---		▼		84	53		
3				2.6	RC		---	---	---				81	65		
4				3.6	RC		---	---	---				88	11		
5	66.762			4.6	RC		---	---	---				96	20		
6	66.162		Slightly weathered grey coloured Siltstone	5.6	RC		---	---	---				95	31		
7	65.162		Slightly weathered grey coloured Shale with Siltstone	6.6	RC		---	---	---				97	42		
8	64.162		Slightly weathered grey coloured Siltstone	7.6	RC		---	---	---				97	25		
9	63.162		Slightly weathered grey coloured Shale with Siltstone	8.6	RC		---	---	---				94	13		
10			Slightly weathered grey coloured Siltstone with fine grained Sandstone patches	9.6	RC		---	---	---				98	0		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.762 m **EAST:** E or X = 1252.92 **NORTH:** N or Y = 4382.05

TYPE OF BORING: Rotary **BORING NO:** BH 72

DIAMETER OF BORING: 150mm upto 1.60m & Nx from 1.60 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: CHP Area **DATE STARTED:** 31/8/09 **COMPLETED:** 3/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10																
	61.162		Slightly weathered grey coloured fine grained Sandstone	10.6	RC		---	---	---				98	0		
11																
				11.6	RC		---	---	---				95	24		
12																
				12.6	RC		---	---	---				94	85		
13																
	58.162		Slightly weathered grey coloured Siltstone with fine grained Sandstone and patches of Shale	13.6	RC		---	---	---				96	45		
14																
	57.162		Slightly weathered grey coloured Siltstone with fine grained Sandstone patches	14.6	RC		---	---	---				97	35		
15																
	56.162		Slightly weathered grey coloured fine grained Sandstone	15.6	RC		---	---	---				99	78		
16																
	55.162		Slightly weathered grey coloured Siltstone & fine grained Sandstone	16.6	RC		---	---	---				95	38		
17																
	54.162		Slightly weathered grey coloured Shale with Siltstone	17.6	RC		---	---	---				97	32		
18																
	53.162		Slightly weathered grey coloured Siltstone with fine grained Sandstone patches	18.6	RC		---	---	---				96	0		
19																
				19.6	RC		---	---	---				98	35		
20	51.762												100	50		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

CLIENT:	NTPC
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)
BOREHOLE ID: BH 73	CO-ORDINATES: East: 1564.61 North: 4050.12
SITE LOCATION : CPU Area	START DATE: 9/9/2009 END DATE: 9/12/2009
GROUND REDUCED LEVEL: 70.54	DRILLING METHOD: Rotary
GROUND WATER TABLE DEPTH: 2.4	CASING DIA: 150mm upto 2.20m & Nx from 2.20 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
1			Grey coloured Clay										
				1.5	UDS				Recovered				
2	68.54								13cm in	---	---		
	68.34		Completely weathered yellowish weathered Siltstone	2	SPT				100 blows N	---	---		
				2.2	RC				>100				
										89	37		
3			Moderately weathered light yellow to grey coloured Siltstone	3.2	RC								
										88	38		
4	66.34			4.2	RC								
										94	15		
5				5.2	RC								
										89	50		
6				6.2	RC								
			Moderately to slightly weathered dirty grey coloured fine grained Sandstone							90	0		
7				7.2	RC								
										89	0		
8				8.2	RC								
										85	0		
9	61.34			9.2	RC								
			Moderately weathered Dirty grey coloured Siltstone							85	0		
10													

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 73	CO-ORDINATES: East: 1564.61	North: 4050.12
SITE LOCATION :	CPU Area	START DATE: 9/9/2009	END DATE: 9/12/2009
GROUND REDUCED LEVEL:	70.54	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	2.4	CASING DIA:	150mm upto 2.20m & Nx from 2.20 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE		BLOWS/15cm			'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
				Sample Depth (m)	SAMPLE TYPE	15	15	15					
	60.34			10.2	RC					85	0		
11			Moderately weathered dirty grey coloured fine grained Sandstone							84	48		
	59.34			11.2	RC								
12			Slightly weathered dirty grey coloured fine to medium grained Sandstone with some patches of Siltstone							90	0		
	58.34			12.2	RC								
13			Slightly weathered dirty grey coloured fine grained Sandstone with some Shale							90	0		
	57.34			13.2	RC								
14			Moderately weathered dirty grey coloured fine grained Sandstone							87	0		
	56.34			14.2	RC								
15			Slightly weathered dirty grey coloured Siltstone	15.2	RC					93	10		
16										90	10		
	54.34			16.2	RC								
17			Slightly weathered dirty grey coloured fine grained Sandstone							91	0		
	53.34			17.2	RC								
18			Slightly weathered dirty grey coloured Siltstone	18.2	RC					92	12		
19				19.2	RC					81	12		
20	50.54									90	18		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash
Checked by : S. Padhi
Job No:

Borehole termination at 20 m

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.053 m **EAST:** E or X = 1298.54 **NORTH:** N or Y = 3769.57

TYPE OF BORING: Rotary **BORING NO:** BH 77

DIAMETER OF BORING: 150mm upto 4.50m & Nx from 4.50 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: SWITCH YARD **DATE STARTED:** 10/9/09 **COMPLETED:** 12/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0																
	68.403		Filled by Sandstone rock (Stray)													
1			Greyish coloured Clay													
				1.5	SPT	1	2	2	3	5						
2											▼			---		
3				3	SPT	2	3	5	8	13						
4														---		
	64.953			4.1	SPT	3	38	44	---	9cm in 100 blows N >100						
	64.553		Completely weathered dirty yellow coloured weathered Sandstone	4.5	RC		---	---	---					---		
5			Slightly weathered dirty yellowish fine grained Sandstone patches										94	87		
				5.5	RC		---	---	---							
6													94	80		
	62.553			6.5	RC		---	---	---							
7			Slightly weathered grey coloured Siltstone with Sandstone										92	86		
	61.553			7.5	RC		---	---	---							
8			Slightly weathered grey coloured Siltstone										96	96		
	60.553			8.5	RC		---	---	---							
9			Slightly weathered fine grained Sandstone with Clay patches										97	47		
	59.553			9.5	RC		---	---	---							
10													97	97		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.053 m **EAST:** E or X = 1298.54 **NORTH:** N or Y = 3769.57

TYPE OF BORING: Rotary **BORING NO:** BH 77

DIAMETER OF BORING: 150mm upto 4.50m & Nx from 4.50 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: SWITCH YARD **DATE STARTED:** 10/9/09 **COMPLETED:** 12/9/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Slightly weathered grey coloured fine grained Sandstone with Clay patches *(continued)*	10.5	RC		---	---	---				97	97		
11													93	93		
	57.553		Slightly weathered fine grained sandstone with some Shale intercalation	11.5	RC		---	---	---							
12													84	51		
	56.553		Slightly weathered grey coloured Shale & Siltstone	12.5	RC		---	---	---							
13													90	68		
	55.553		Slightly weathered grey coloured Sandstone	13.5	RC		---	---	---							
14													95	43		
	54.553		Slightly weathered fine grained Sandstone with Siltstone patches	14.5	RC		---	---	---							
15													95	95		
				15.5	RC		---	---	---							
16													92	92		
	52.553		Slightly weathered grey coloured Siltstone with some patches of Sandstone	16.5	RC		---	---	---							
17													91	76		
				17.5	RC		---	---	---							
18													96	96		
				18.5	RC		---	---	---							
19													98	98		
				19.5	RC		---	---	---							
20	49.053												100	100		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

CLIENT:	NTPC		
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)		
BOREHOLE ID:	BH 81	CO-ORDINATES: East: 1227.45	North: 4090.27
SITE LOCATION :	T P	START DATE: 9/7/2009	END DATE: 9/9/2009
GROUND REDUCED LEVEL:	72.238	DRILLING METHOD: Rotary	
GROUND WATER TABLE DEPTH:	2.3	CASING DIA:	150mm upto 3.20m & Nx from 3.20 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
0	71.538		Filled up soil										
1													
				1.5	UDS				Recovered				
2			Greyish coloured Clay							---	---		
3	69.338			2.9	SPT	38			13cm in 100 blows N >100	---	---		
	69.038		Completely weathered yellowish brown weathered Siltstone	3.2	RC								
4			Moderately to slightly weathered yellowish brown Siltstone with fine grained Sandstone patches	4.2	RC					77	57		
5										92	85		
	67.038			5.2	RC								
6										95	90		
				6.2	RC								
7			Slightly weathered grey coloured Siltstone with fine grained Sandstone patches							100	100		
				7.2	RC								
8										95	35		
				8.2	RC								
9										96	96		
	63.038			9.2	RC								
10			Slightly weathered grey coloured Siltstone							87	56		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

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Job No:
PAGE 1 OF 2

Borehole termination at 20 m

CLIENT:	NTPC
PROJECT NAME:	Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)
BOREHOLE ID: BH 81	CO-ORDINATES: East: 1227.45 North: 4090.27
SITE LOCATION : T P	START DATE: 9/7/2009 END DATE: 9/9/2009
GROUND REDUCED LEVEL: 72.238	DRILLING METHOD: Rotary
GROUND WATER TABLE DEPTH: 2.3	CASING DIA: 150mm upto 3.20m & Nx from 3.20 to 20.0m BGL

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	BLOWS/15cm 15	15	15	'N' Field	Core Recovery(%)	RQD (%)	Other Tests	REMARKS
	62.038			10.2	RC					87	56		
11			Slightly weathered Grey coloured fine grained Sandstone							90	90		
	61.038			11.2	RC								
12			Slightly weathered grey coloured fine grained Sandstone with some Shale intercalation							93	34		
	60.038			12.2	RC								
13										97	97		
			Slightly weathered grey coloured fine to medium grained Sandstone	13.2	RC								
14										97	97		
	58.038			14.2	RC								
15										88	52		
			Slightly weathered grey coloured Siltstone	15.2	RC								
16										97	18		
	56.038			16.2	RC								
17										95	86		
				17.2	RC								
18										97	81		
			Slightly weathered grey coloured Siltstone with fine grained Sandstone patches.	18.2	RC								
19										96	79		
				19.2	RC								
20	52.238									95	95		

SPT N = STANDARD PENETRATION TEST VALUE RQD = ROCK QUALITY DESIGNATION UDS = UNDISTURBED SOIL SAMPLE
RC = ROCK CORE DS = DISTURBED SAMPLE VST = VANE SHEAR TEST

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD
PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

Logged by : Akash Checked by : S. Padhi

Job No: PAGE 2 OF 2

Borehole termination at 20 m

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.759 m **EAST:** E or X = 700 **NORTH:** N or Y = 4900

TYPE OF BORING: Rotary **BORING NO:** BH 84

DIAMETER OF BORING: 150mm upto 3.20m & Nx from 3.20 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/10/09 **COMPLETED:** 11/12/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0			Grayish coloured clay													
				1.5	UDS	1	---	---	---	Recovered				---		
3				3	SPT	1	8	---	---					---		
	67.559			3.2	RC		---	---	---							
4			Highly to moderately weathered yellowish coloured fine grained sand stone with some Siltstone										50	30		
				4.2	RC		---	---	---							
5													50	41		
				5.2	RC		---	---	---							
6													53	28		
				6.2	RC		---	---	---							
7													66	15		
				7.2	RC		---	---	---							
8													68	56		
	62.559			8.2	RC		---	---	---							
9			Moderately weathered greyish coloured fine grained sand stone with some patches of shales.										72	47		
				9.2	RC		---	---	---							
10													74	59		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.759 m **EAST:** E or X = 700 **NORTH:** N or Y = 4900

TYPE OF BORING: Rotary **BORING NO:** BH 84

DIAMETER OF BORING: 150mm upto 3.20m & Nx from 3.20 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/10/09 **COMPLETED:** 11/12/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Moderately weathered greyish coloured fine grained sand stone with some patches of shales. *(continued)*	10.2	RC		---	---	---				74	59		
													73	66		
11				11.2	RC		---	---	---							
													80	14		
12	58.559			12.2	RC		---	---	---							
			Moderately weathered greyish coloured fine grained Sandstone with patches of Siltstone										81	47		
13				13.2	RC		---	---	---							
													80	54		
14				14.2	RC		---	---	---							
													78	10		
15				15.2	RC		---	---	---							
													81	67		
16				16.2	RC		---	---	---							
													84	79		
17	53.559			17.2	RC		---	---	---							
			Moderately weathered greyish coloured shales with some Siltstone patches										73	0		
18				18.2	RC		---	---	---							
	52.259															
			Moderately weathered greyish coloured Siltstone										70	29		
19				19.2	RC		---	---	---							
													73	58		
20																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

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N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.759 m **EAST:** E or X = 700 **NORTH:** N or Y = 4900

TYPE OF BORING: Rotary **BORING NO:** BH 84

DIAMETER OF BORING: 150mm upto 3.20m & Nx from 3.20 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/10/09 **COMPLETED:** 11/12/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
20	50.559		Moderately weathered greyish coloured sitl stone with some fine grained Sandstone patches	20.2	RC		---	---	---				73	58		
													76	57		
21				21.2	RC		---	---	---							
													71	0		
22				22.2	RC		---	---	---							
													78	63		
23				23.2	RC		---	---	---							
													77	13		
24				24.2	RC		---	---	---							
													90	10		
25	45.759															
26																
27																
28																
29																
30																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

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PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.67 m **EAST:** E or X = 600 **NORTH:** N or Y = 4700

TYPE OF BORING: Rotary **BORING NO:** BH 87

DIAMETER OF BORING: 150mm upto 5.20m & Nx from 5.20 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/11/09 **COMPLETED:** 13/11/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0			Yellowish coloured clay													
				1.5	UDS	1	---	---	---	Recovered				---		
3				3	SPT	1	3	3	5	8				---		
	66.87			3.8	SPT	2	23	32	---	10 cm in 100blows N>100				---		
4			Completely weathered yellowish coloured fine grained Sandstone													
				4.5	SPT	3	34	---	---	11 cm in 100blows N>100				---		
5	65.47			5.2	RC		---	---	---							
			Highly to moderately fine grained Sandstone and Siltstone										53	24		
6				6.2	RC		---	---	---							
													53	0		
7				7.2	RC		---	---	---							
													56	0		
8				8.2	RC		---	---	---							
													61	0		
9				9.2	RC		---	---	---							
													62	0		
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.67 m **EAST:** E or X = 600 **NORTH:** N or Y = 4700

TYPE OF BORING: Rotary **BORING NO:** BH 87

DIAMETER OF BORING: 150mm upto 5.20m & Nx from 5.20 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/11/09 **COMPLETED:** 13/11/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
10	60.47		Moderately weathered light greyish coloured fine grained Sandstone with Siltstone patches	10.2	RC		---	---	---				62	0		
													64	15		
11				11.2	RC		---	---	---							
													69	19		
12				12.2	RC		---	---	---							
													69	0		
13				13.2	RC		---	---	---							
													71	15		
14				14.2	RC		---	---	---							
													74	12		
15				15.2	RC		---	---	---							
													75	27		
16	54.47		Moderately weathered light greyish coloured shales with some Siltstone	16.2	RC		---	---	---							
													65	0		
17				17.2	RC		---	---	---							
	53.17		Moderately weathered yellowish to grayish coloured Siltstone with some fine grained Sandstone patches										69	23		
18				18.2	RC		---	---	---							
													77	14		
19				19.2	RC		---	---	---							
													79	0		
20																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.67 m **EAST:** E or X = 600 **NORTH:** N or Y = 4700

TYPE OF BORING: Rotary **BORING NO:** BH 87

DIAMETER OF BORING: 150mm upto 5.20m & Nx from 5.20 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/11/09 **COMPLETED:** 13/11/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
20																
			Moderately weathered yellowish to grayish coloured Siltstone with some fine grained Sandstone patches *(continued)*	20.2	RC		---	---	---				79	0		
21													82	12		
				21.2	RC		---	---	---							
22													79	37		
	48.47			22.2	RC		---	---	---							
			Moderately weathered greyish coloured fine grained Sandstone and some Siltstone patches										77	29		
23				23.2	RC		---	---	---							
													80	72		
24				24.2	RC		---	---	---							
													90	58		
25	45.67															
26																
27																
28																
29																
30																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.923 m **EAST:** E or X = 500 **NORTH:** N or Y = 4600

TYPE OF BORING: Rotary **BORING NO:** BH 88

DIAMETER OF BORING: 150mm upto 4.90m & Nx from 4.90 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/8/09 **COMPLETED:** 11/10/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0			Grayish coloured clay													
				1.5	UDS	1	---	---	---	Recovered				---		
3				3	SPT	1	2	2	3	5				---		
				4.5	SPT	2	2	3	3	6				---		
5	66.023			4.9	RC		---	---	---							
			Highly weathered yellowish brown Siltstone.										54	0		
6	65.023			5.9	RC		---	---	---							
			Highly to moderately weathered Siltstone with fine grained Sandstone of yellowish brown colour in patches.										71	0		
7				6.9	RC		---	---	---							
													70	28		
8				7.9	RC		---	---	---							
													72	62		
9	62.023			8.9	RC		---	---	---							
			Moderately weathered greyish coloured Siltstone with intercolation of shales.										73	43		
10				9.9	RC		---	---	---							

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.923 m **EAST:** E or X = 500 **NORTH:** N or Y = 4600

TYPE OF BORING: Rotary **BORING NO:** BH 88

DIAMETER OF BORING: 150mm upto 4.90m & Nx from 4.90 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/8/09 **COMPLETED:** 11/10/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
10			Moderately weathered greyish coloured Siltstone with intercolation of shales. *(continued)*										79	54		
													79	54		
11	60.023		Moderately weathered greyish coloured fine to medium grained Sandstone	10.9	RC		---	---	---							
													78	27		
12				11.9	RC		---	---	---							
													79	44		
13	58.023		Moderately weathered greyish coloured Siltstone.	12.9	RC		---	---	---							
													80	37		
14	57.023		Moderately weathered greyish coloured fine grained Sandstone	13.9	RC		---	---	---							
													78	44		
15				14.9	RC		---	---	---							
	55.423												80	45		
16	54.923		Moderately weathered greyish coloured Siltstone.	15.9	RC		---	---	---							
			Moderately weathered greyish coloured fine grained Sandstone										77	10		
17				16.9	RC		---	---	---							
													82	29		
18				17.9	RC		---	---	---							
													84	0		
19				18.9	RC		---	---	---							
													81	0		
20	50.923			19.9	RC		---	---	---							

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.923 m **EAST:** E or X = 500 **NORTH:** N or Y = 4600

TYPE OF BORING: Rotary **BORING NO:** BH 88

DIAMETER OF BORING: 150mm upto 4.90m & Nx from 4.90 to 25.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Reservoir Area **DATE STARTED:** 11/8/09 **COMPLETED:** 11/10/09

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
20													80	0		
			Moderately to slightly weathered greyish coloured Siltstone.										80	0		
21				20.9	RC		---	---	---							
													84	0		
22				21.9	RC		---	---	---							
													83	0		
23				22.9	RC		---	---	---							
													84	0		
24	46.923			23.9	RC		---	---	---							
			Moderately to slightly weathered greyish coloured siltstone with fine grained Sandstone patches										86	52		
25	45.923															
26																
27																
28																
29																
30																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.559 m **EAST:** E or X = 1280.23 **NORTH:** N or Y = 3842.83

TYPE OF BORING: Rotary **BORING NO:** BH 109

DIAMETER OF BORING: 150mm upto 5.00m & Nx from 5.00 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Service Building **DATE STARTED:** 28/3/10 **COMPLETED:** 30/3/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0																
			Greyish coloured clay								▼					
1																
				1.5	SPT	1	2	3	4	7				---		
2																
3	66.559			3	UDS	1	---	---	---	Recovered				---		
			Brownish coloured clay													
4																
				4.5	SPT	2	4	4	---	5cm in 100 blow N>100				---		
5	64.759															
	64.559		Completely weathered yellowish brown coloured fine grained Sandstone patches.	5	RC		---	---	---							
			Moderately weathered yellowish brown coloured fine grained Sandstone with some Siltstone.										69	47		
6				6	RC		---	---	---							
													85	85		
7				7	RC		---	---	---							
													87	79		
8				8	RC		---	---	---							
	61.359		Moderately weathered greyish coloured fine grained Sandstone with intercolation of Shales.										86	38		
9	60.559			9	RC		---	---	---							
			Slightly weathered greyish coloured fine grained Sandstone.										93	87		
	59.759															
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.559 m **EAST:** E or X = 1280.23 **NORTH:** N or Y = 3842.83

TYPE OF BORING: Rotary **BORING NO:** BH 109

DIAMETER OF BORING: 150mm upto 5.00m & Nx from 5.00 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Service Building **DATE STARTED:** 28/3/10 **COMPLETED:** 30/3/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
10			Slightly weathered greyish coloured Shales. *(continued)*	10	RC		---	---	---				91	83		
	58.759															
11			Slighly weathered greyish coloured fine grained Sandstone with some Siltstone patches	11	RC		---	---	---				92	36		
12				12	RC		---	---	---				98	45		
13				13	RC		---	---	---				97	85		
14				14	RC		---	---	---				90	58		
15				15	RC		---	---	---				90	77		
16				16	RC		---	---	---				87	25		
	53.059		Slightly weathered greyish coloured Shales.													
17				17	RC		---	---	---				93	52		
18	51.559		Slightly weathered greyish coloured fine grained Sandstone.	18	RC		---	---	---				89	0		
19				19	RC		---	---	---				95	0		
20	49.559															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.285 m **EAST:** E or X = 1556.13 **NORTH:** N or Y = 3840.53

TYPE OF BORING: Rotary **BORING NO:** BH 110

DIAMETER OF BORING: 150mm upto 5.60m & Nx from 5.60 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: T.G Hall **DATE STARTED:** 31/3/10 **COMPLETED:** 4/3/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0			Greyish coloured clay													
1											▼					
				1.5	UDS	1	---	---	---	Recovered				---		
2																
3				3	SPT	1	3	4	5	9				---		
4																
	65.085															
5			Completely weathered yellowish brown coloured fine grained Sandstone with Siltstone patches													
	63.685			5.6	RC		---	---	---							
6			Moderately weathered yellowish brown coloured fine grained Sandstone with Siltstone patches										61	10		
				6.6	RC		---	---	---							
7													71	11		
	61.685			7.6	RC		---	---	---							
8			Moderately weathered greyish coloured fine grained Sandstone with Siltstone patches										70	0		
				8.6	RC		---	---	---							
9													70	0		
	60.085															
10			Moderately weathered greyish coloured fine grained Sandstone.	9.6	RC		---	---	---				75	0		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 69.285 m **EAST:** E or X = 1556.13 **NORTH:** N or Y = 3840.53

TYPE OF BORING: Rotary **BORING NO:** BH 110

DIAMETER OF BORING: 150mm upto 5.60m & Nx from 5.60 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: T.G Hall **DATE STARTED:** 31/3/10 **COMPLETED:** 4/3/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Moderately weathered greyish coloured fine grained Sandstone. *(continued)*	10.6	RC		---	---	---				75	0		
11				11.6	RC		---	---	---				82	0		
12				12.6	RC		---	---	---				79	0		
13				13.6	RC		---	---	---				80	0		
	55.685															
14			Moderately weathered greyish coloured Siltstone.	14.6	RC		---	---	---				78	0		
	54.685															
15			Moderately weathered greyish coloured fine grained Sandstone.	15.6	RC		---	---	---				82	0		
16				16.6	RC		---	---	---				85	0		
17				17.6	RC		---	---	---				86	0		
18				18.6	RC		---	---	---				89	0		
19				19.6	RC		---	---	---				76	0		
20	49.285												85	0		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.143 m **EAST:** E or X = 1343.25 **NORTH:** N or Y = 3896.45

TYPE OF BORING: Rotary **BORING NO:** BH 111

DIAMETER OF BORING: 150mm upto 3.20m & Nx from 3.20 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Boiler **DATE STARTED:** 27/3/10 **COMPLETED:** 30/3/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0																
			Brownish gray coloured clay													
1											▼					
				1.5	UDS	1	---	---	---	Recovered				---		
2																
3				3	SPT	1	5	---	---	6cm in 100 blow N>100				---		
	66.943			3.2	RC		---	---	---							
			Moderately weathered yellowish brown coloured fine grained Sandstone.										72	12		
4				4.2	RC		---	---	---							
													73	0		
5				5.2	RC		---	---	---							
													70	16		
6				6.2	RC		---	---	---							
													70	0		
7																
	62.943			7.2	RC		---	---	---							
			Moderately weathered greyish coloured fine grained Sandstone										68	10		
8				8.2	RC		---	---	---							
													65	0		
9				9.2	RC		---	---	---							
													66	17		
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

For O.I.C & R. PVT. LTD

ORBITAL INFRASTRUCTURE CONSULTANCY & RESEARCH PRIVATE LTD

PLOT NO. 1134, MAHANADI BIHAR, CUTTAK - 753 004

PH: 0671- 2443588 Tele Fax: 0671 - 2443408

N: ___

PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.143 m **EAST:** E or X = 1343.25 **NORTH:** N or Y = 3896.45

TYPE OF BORING: Rotary **BORING NO:** BH 111

DIAMETER OF BORING: 150mm upto 3.20m & Nx from 3.20 to 20.0m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 20 m **SOIL SAMPLER USED:**

LOCATION: Boiler **DATE STARTED:** 27/3/10 **COMPLETED:** 30/3/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
10	59.743			10.2	RC		---	---	---				66	17		
			Moderately weathered greyish coloured Siltstone										70	38		
11	59.143		Moderately to slightly weathered greyish coloured fine grained Sandstone.	11.2	RC		---	---	---				67	0		
12				12.2	RC		---	---	---				62	0		
13				13.2	RC		---	---	---				62	0		
14				14.2	RC		---	---	---				61	0		
15				15.2	RC		---	---	---				82	0		
16				16.2	RC		---	---	---				83	0		
17				17.2	RC		---	---	---				84	0		
18				18.2	RC		---	---	---				86	0		
19				19.2	RC		---	---	---				90	0		
20	50.143															

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 20 m

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PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 70.217 m **EAST:** E or X = 791.35 **NORTH:** N or Y = 4831.26

TYPE OF BORING: Rotary **BORING NO:** BH 115

DIAMETER OF BORING: 150mm upto 6.10m & Nx from 6.10 to 24.10m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 24.1 m **SOIL SAMPLER USED:**

LOCATION: Water Treatment Plant **DATE STARTED:** 17/4/10 **COMPLETED:** 21/4/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Sample Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
0																
1			Filled up soil													
				1.5	SPT	1	3	3	5	8				---		
2																
3	67.417		Greyish coloured clay	3	SPT	2	4	5	7	12				---		
4																
				4.5	UDS	1	---	---	---	Recovered				---		
5																
6	64.117			6	SPT	3	---	---	---	10cm in 100 blow N>100				---		
			Moderately weathered yellowish brown coloured fine grained Sandstone.	6.1	RC		---	---	---				64	10		
7				7.1	RC		---	---	---				66	39		
8				8.1	RC		---	---	---				77	74		
9				9.1	RC		---	---	---				74	74		
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 24.1 m

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GROUND SURFACE ELEVATION: 70.217 m **EAST:** E or X = 791.35 **NORTH:** N or Y = 4831.26

TYPE OF BORING: Rotary **BORING NO:** BH 115

DIAMETER OF BORING: 150mm upto 6.10m & Nx from 6.10 to 24.10m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 24.1 m **SOIL SAMPLER USED:**

LOCATION: Water Treatment Plant **DATE STARTED:** 17/4/10 **COMPLETED:** 21/4/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE Depth (m)	SAMPLE TYPE	Sample Number	BLOWS/15cm 15 cm	15 cm	15 cm	"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
10			Moderately weathered yellowish brown coloured fine grained Sandstone. *(continued)*	10.1	RC		---	---	---				86	86		
11	59.117		Moderately weathered greyish coloured laminated Shales with some Siltstone.	11.1	RC		---	---	---				71	0		
12				12.1	RC		---	---	---				77	0		
13				13.1	RC		---	---	---				79	40		
14	56.717		Moderately weathered greyish coloured fine grained Sandstone with some Siltstone patches	14.1	RC		---	---	---				76	58		
15				15.1	RC		---	---	---				74	49		
16				16.1	RC		---	---	---				78	68		
17				17.1	RC		---	---	---				77	63		
18				18.1	RC		---	---	---				80	36		
19				19.1	RC		---	---	---				84	84		
20																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
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Borehole termination at 24.1 m

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TYPE OF BORING: Rotary **BORING NO:** BH 115

DIAMETER OF BORING: 150mm upto 6.10m & Nx from 6.10 to 24.10m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 24.1 m **SOIL SAMPLER USED:**

LOCATION: Water Treatment Plant **DATE STARTED:** 17/4/10 **COMPLETED:** 21/4/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
20																
			Moderately weathered greyish coloured fine grained Sandstone with some Siltstone patches *(continued)*	20.1	RC		---	---	---				86	58		
21				21.1	RC		---	---	---				84	84		
22				22.1	RC		---	---	---				80	65		
23				23.1	RC		---	---	---				85	85		
24	46.117			24.1			---	---	---					---		
25																
26																
27																
28																
29																
30																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
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Borehole termination at 24.1 m

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PROJECT NAME Geotechnical Investigation for NTPC Talcher Thermal Stage III (2 x 660 MW)

GROUND SURFACE ELEVATION: 71.467 m **EAST:** E or X = 752.75 **NORTH:** N or Y = 4745.75

TYPE OF BORING: Rotary **BORING NO:** BH 116

DIAMETER OF BORING: 150mm upto 5.80m & Nx from 5.80 to 25m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Water Treatment Plant **DATE STARTED:** 4/12/10 **COMPLETED:** 15/4/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
0																
			Filled up soil													
1																
				1.5	SPT	1	2	3	4	7				---		
2											▼					
	68.867															
3			Greyish coloured clay	3	UDS	1	---	---	---	Recovered				---		
4																
				4.5	SPT	2	3	4	6	10				---		
5																
	65.667															
6			Moderately weathered yellowish brown coloured Siltstone.	5.8	RC		---	---	---				58	0		
				6.8	RC		---	---	---							
7													65	0		
				7.8	RC		---	---	---							
8													64	0		
				8.8	RC		---	---	---							
9													68	23		
				9.8	RC		---	---	---				65	0		
10																

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
Ref: I.S : 1892; 1498; 2131 & 2132.
SPT : Standard Penetration Test & UDS : Undisturbed soil sample.

Borehole termination at 25 m

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GROUND SURFACE ELEVATION: 71.467 m **EAST:** E or X = 752.75 **NORTH:** N or Y = 4745.75

TYPE OF BORING: Rotary **BORING NO:** BH 116

DIAMETER OF BORING: 150mm upto 5.80m & Nx from 5.80 to 25m BGL **TYPE OF BIT USED:** Double tube

TOTAL HOLE DEPTH: 25 m **SOIL SAMPLER USED:**

LOCATION: Water Treatment Plant **DATE STARTED:** 4/12/10 **COMPLETED:** 15/4/10

DEPTH (m)	Reduced Level (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE			BLOWS/15cm			"N" Field	Water Level	Bulk Density gmc/cc	Recovery Length/ Recovery (%)	RQD (%)	Fracture Frequency per Meter	Serial Number of Recovered
				Sample Depth (m)	SAMPLE TYPE	Sample Number	15 cm	15 cm	15 cm							
10			Moderately weathered yellowish brown coloured Siltstone. *(continued)*										65	0		
11				10.8	RC		---	---	---				72	26		
12				11.8	RC		---	---	---				66	0		
13				12.8	RC		---	---	---				75	0		
	57.967		Moderately weathered greyish coloured Siltstone.													
14				13.8	RC		---	---	---				65	12		
15				14.8	RC		---	---	---				70	0		
16				15.8	RC		---	---	---				72	0		
17				16.8	RC		---	---	---				75	19		
18				17.8	RC		---	---	---				70	0		
19				18.8	RC		---	---	---				72	0		
20				19.8	RC		---	---	---				75	0		

Remarks: Boring, field test and sample collection conducted as per B.I.S Specification only.
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Borehole termination at 25 m

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