

JUSTIFICATION FOR LOCATING THE “Y-CURVE CONNECTION RAILWAY PROJECT” IN FOREST LAND

M/s Vedanta Limited (VL) is in the process of enhancing the plant capacity from the existing 2 MTPA capacity to 6 MTPA Alumina refining. Presently VL is having single railway line which is connected to Indian railway line at Ambadola. Railway Station. Majority rakes are for bauxite movement which is coming from Rayagada side. Due to present arrangement, all the trains coming from Rayagada end are to be reversed by engine reversal at Ambadola station and going to inside plant. Present line capacity is only capable to handle present traffic load. Additional line from Rayagada side rail movement is required to handle the additional traffic movement to enhance the plant capacity. At 4 MTPA stage around 61% of the trains of M/s VL will run via-SPRD through Ambodala Station. Reversal of engine and brake-van is required at AMB in SPRD direction. In this case, a second connectivity is essentially required for the 4 MTPA operation either from Dohikalu (DKLU) station or from the mid-section between DKLU-AMB is required. In order to find optimum feasible solution, VL engaged Railway consultant RITES.

Rail India Technical and Economical Services Limited (RITES) had worked out different options for taking up tapping from the railway main line. During analysis, they had checked up all the feasibilities to arrive at technically feasible solution including optimization of forest area. Railway line take off from railway 3rd line is permitted only from flatter gradient which is only available in the selected location in between Dohikalu and

Ambadola. Option of taking off from Dohikalu station is fouling with large forest lands and costlier. So taking above into consideration, it has been decided to take the land on the eastern side of the existing Railway line connected to inside plant.

The new railway “Y-Curve connection will be developed over a total area measuring 12.538 acer out of which 2.836 acer (1.147 Ha.) (22.6 %) is forest land (including the land recorded as forest land as per Sabik status as on 25.10.1980) .As the proposed area is adjacent to the existing railway path connecting to inside plant it is technically feasible & the development of “Y-Curve railway line connection is unavoidable . Thus, diversion of the forest land is essential for the development of new railway line. Detail description for selection of proposed option is explained in chapter-6 of Feasibility study report (FSR) which was approved by the Indian railway.

CIN:U74899DL1974GOI007227

राइट्स लिमिटेड

(भारत सरकार का प्रतिष्ठान)

क्षेत्रीय परियोजना कार्यालय: भगवान टावर, प्रथम मंजिल, कटक रोड, भुवनेश्वर-751006.
दूरभाष: (0674) 2575493, 2572690, 2572527, 2570774, 2570775, फाक्स: 2575284

RTES LIMITED

(A Govt. of India Enterprise)

Regional Project Office: Bhagwan Tower, 1st Floor, Block-A, Cuttack Road, Bhubaneswar-751 006.

E-mail ID: bbsrpo@rites.com. Phone: (0674) 2575493, 2572690, 2572527, 2570774, 2570775, Fax: 2575284

No. RTES/BBSR/VED-YCONN/2019/176

Dt: 04.02.2019

To

✓ The Chief Transportation Planning Manager,
East Coast Railway, Rail Sadan,
Chandrasekharapur,
Bhubaneswar-751017.

Sub: Submission of Feasibility Study Report for the proposed 'Y'-Connectivity for the plant expansion to 4MTPA of M/s. Vedanta Limited taking off from proposed block section between Doikallu and Ambadola stations.

Sir,

With reference to the above, the 03 copies of Feasibility Study Report for the proposed 'Y'-Connectivity for the plant expansion to 4MTPA of M/s. Vedanta Limited from the proposed mid-section block station between Doikallu and Ambadola stations is submitted herewith for your perusal.

This is for your kind information and necessary action please.

Thanking you,

Encl: 1) 03 copies of Feasibility Study Report

Yours faithfully,


(K Venkatesh)

Jt. General Manager (C)

C.C to: Shri. P. Kumar, General Manager, Vedanta Limited, Lanjigarh for information please.



कोर्पोरेट कार्यालय: भगवान नं० 1, सेक्टर-29, गुडगाँव-122 001 (भारत). Corporate Office: RTES Bhawan, No. 1, Sector-29, Gurgaon-122 001 (INDIA)
पंजीकृत कार्यालय: स्कोप मिनार, लक्ष्मी नगर, दिल्ली-110 092 (भारत). Registered Office: SCOPE Minar, Laxmi Nagar, Delhi-110 092 (INDIA)
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No. RITES/BBSR/VED-Y-Curve/2019/634
Dt.02.05.2019

To,

The GM (Projects),
Alumina Refinery,
M/s Vedanta Ltd.
Post- Lanjigarh
Dist.- Klahandi, 766027

Sub: Feasibility Study Report (FSR) for Rail infrastructure for 4 MTPA expansion project of Alumina refinery plant of Vedanta Ltd. Lanjigarh, Odisha.

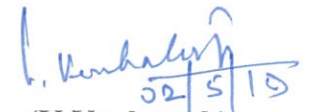
Dear Sir,

In reference to above subject, the FSR in soft copy has been submitted to you by e-mail. As desired by you over phone, now the same is submitted in hard copy for your record please.

Thanking you,

Encl: FSR (1 hard copy).

Yours faithfully


(K.Venkatesh)
JGM (Civil)

No. COM/Plg./BBS/AMB/VAL/219/Pt-IV

General Manager(Project)
M/s Vedanta Limited,
P.O: Lanjigarh,
Dist.:Kalahandi, Odisha- 766027.

Sub: In-principle approval (IPA) for Rail connectivity for 4 MTPA plant expansion of Vedanta Ltd at Ambodala station under Sambalpur Division.

Ref: i) This office letter of even No. on MoM held on 20.08.2019.
M/s RITES's letter Nos.
i) RITES/ BBSR/VED-Y CON/2019/733 dtd-28.05.2019.
ii) RITES/ BBSR/VED-Y CON/2019/581 dtd-17.04.2019.
iii) RITES/ BBSR/VED-Y CON/2019/176 dtd-04.02.2019.

In reference to above mentioned letters, 'In Principle Approval' (IPA) for Rail connectivity for 4 MTPA plant expansion of Vedanta Ltd at Ambodala station is hereby accorded by the competent authority of East Coast Railway.

You are advised to contact the concerned Officials of Sambalpur Division, East Coast Railway, submit the Detailed Project Report (DPR) and get the detailed plans and estimates approved. The money for execution of Deposit Work shall also be deposited with the Railways, as applicable within the specified time-frame.

This approval is subject to:-

1. New 'Y' connection shall be constructed by M/s Vedanta Ltd. as soon as possible to cater to the enhanced traffic.
2. Proposed loops of New Block station on 3rd line shall have both side entry & exit instead of one side entry at Rayagada end.
3. Construction of Double line between Crossing station & In-plant yard.
4. Average speed potential of the siding will be 50 KMPH to improve running time.
5. Crossing station on the lead line shall have minimum 4 lines.
6. Efforts to be made to eliminate all Level crossings en-route either by Limited Height Subway or to be manned.
7. Traffic Study shall be conducted to minimize detention at different points by suitable infrastructure.
8. Technical suitability of take off point of new Block Station at Bridge No. 448 shall be ensured.
9. Freight Marketing Circular No. 11 of 2016 with modification shall be applicable. Timeline and procedure thereto shall be adhered to.

Please acknowledge receipt of the letter.



(Sanjaya Mahapatra)
Chief Transportation Planning Manager

Copy to:

- i) PCE, PFA, PCCM, PCSTE, PCME & PCEE for information please.
- ii) DRM/SBP for information please.
- iii) M/S RITES/BBS for information & necessary action.

**FEASIBILITY STUDY REPORT FOR DEVELOPMENT OF
'Y'-CONNECTION FOR 4MTPA PLANT EXPANSION OF
M/S. VEDANTA LIMITED AT LANJIGARH TAKING OFF
FROM MID-SECTION BLOCK CABIN BETWEEN DOIKALLU
AND AMBADOLA STATIONS**



FEBRUARY 2019



Bhagwan Tower, 1st Floor, Block - A, Cuttack Road, Bhubaneswar - 751006

‘Y’ Connectivity from Doikalu end with Vedanta Crossing Station & System Of Working

6.0 NECESSITY OF DOIKALU CONNECTIVITY/MID-SECTION ‘Y’ CONNECTIVITY:

Line capacity between AMB- In-plant yards after developing Vedanta Crossing station, total number of trains at 4 MTPA justifies the movement theoretically. But, the practical running of trains will depend upon the availability of lines at AMB. Moreover, at 4 MTPA stage, about 61% i.e. 21 trains out of total 34.5 trains of M/s VL will run Via- SPRD. Reversal of engine and Brake-van is required at AMB for movement of these trains via AMB in SPRD direction. In this scenario, running of trains at the projected 4 MTPA stage cannot be achieved unless a second connectivity is explored for direct movement of trains in SPRD direction. This connectivity is to be developed either from Doikalu (DKLU) station or from mid-section between DKLU-AMB.

6.1 DOIKALU (DKLU) STATION:

Doikalu(DKLU) is a four line station situated at KM 275.255 from Raipur in Titlagarh–Vizianagaram double line section of Sambalpur Division in East Coast Railway .It is a Standard –III(R) interlocked, ‘B’ class station equipped with MACLS (Multiple Colour Light Signal) having central panel system and block proving axle counter has been provided at either end of the section. The adjacent block stations Ambodala(AMB) is situated at a distance of 11.7 Km towards Raipur and Muniguda (MNGD) station is situated at a distance of 13.3 Km towards Vizianagaram. Trains coming from Ambodala end are UP trains, whereas trains coming from Muniguda end are DN trains.

6.1.1 Existing Layout:

Doikalu station is provided with four running lines with standard – III Panel interlocking.

Nomenclature	Description	CSL in M	Platform Facility
Line No.1	1 st Loop / Common Loop	710	Rail Level (P/F)
Line No.2	UP Main Line	757	–
Line No.3	DN Main Line	804	–
Line No.4	DN Loop	771	Low Level (P/F)
Goods Siding	–	85	Takeoff from L/1

6.1.2 Gradient:

From the centre of station building towards Ambodala:

Chainage In Meter		Inter Distance	Gradient
From	To		
0m	281m	281m	1in 700F
281m	650m	369m	1in 1000R
650m	738m	88m	1in 300R
738m	930m	192m	Level
930m	1413m	483m	1in 230R
1413m	1555m	142m	Level
1555m	1915m	360m	1in 400F
1915m	2055m	140m	Level
2055m	2275m	220m	1in 200R
2275m	2433.5m	158.5m	Level
2433.5m	3185m	751.5m	1in 150F
3185m	Block Section	Level	

6.1.3 Proposed Modification at Doikalu:

The proposed 3rd line will run besides Line No.4 at opposite side of station building at Doikalu. A long haul loop and one loop cum Ballast siding line is being drawn from 3rd line. 3rd line will not be integrated with the existing yard at DKL. 3rd line will be integrated at Muniguda and Ambodala station. The layout of upcoming 3 lines of DKL station will be:-

Nomenclature	Description	CAL in M	Platform Facility
Line No.5	3 rd Line	793.698	
Line No.6	Loop Line (Long haul Loop)	750.0	High Level P/F
Line No.7	Loop line cum Banker siding		

6.2 CROSSING STATION BETWEEN AMBODALA AND IN-PLANT YARD:

M/s Vedanta Ltd. is developing a Crossing station namely Vedanta Crossing Station between AMB station and In-plant yard at a distance of 6.675 km from AMB station. The station is planned with construction of two loop lines besides the lead line. Thus the station will be 3 full length running lines. The proposed 'Y' connectivity will connect this Crossing station.

6.3 PROPOSAL FOR ONE 'Y' CONNECTION FROM DOIKALU STATION WITH THE PROPOSED STATION

Possibility of 'Y' connectivity is examined with different options as elaborated below:

6.3.1 Different Options for the Siding:

Option – 1:

During commissioning of 3rd line, a dedicated three-line yard (second yard) will be constructed at Doikalu station besides the present 4th line. Out of these three lines, one will be the dedicated 3rd line, a Long-Haul Loop and one additional loop line cum Ballast/Banker siding. The alignment is to be drawn at opposite side of the new yard to run towards Vedanta Plant to avoid surface crossing of Main line. As such, the alignment is to be drawn from L/6 of new yard. While examining the proposed lead line for connecting with Vedanta Crossing station, it is noticed that a big ditch is falling on the path. The measurement of the ditch is about 4300m long×1500m width and the depth of the ditch ranges between 40m to 100m, where construction of a line is hardly possible. So, with this option to develop a dedicated connectivity from DKLU is not possible.

Option – 2:

In this option, the takeoff arrangement will remain same as that of option-1 and the proposed line will move parallel to the proposed 3rd line for a distance of about 8 km from where it will deflect with a LH curve to run parallel to existing Vedanta Siding. But construction of line besides the 3rd line will be difficult for a long stretch in hilly terrain where construction of line will involve forest land. Railway also will not permit to utilize its land for drawing such a long stretch of lead line. Considering the view, this option is also not considered.

Option- 3

The only option is left to develop a mid-section Block Station between DKL and AMB stations by splitting the upcoming single line (3rd Line) block section with provision of a cross-over at CH: 4672.595m F/CSB, AMB. From this cross-over a two-line yard will be developed to deal with trains of M/s Vedanta Limited.

This Block Station will control movement of trains running over 3rd line between DKL – New Block Station and New Block Station- AMB. In addition, this New Block Station will also control movement of trains between New Block Station and Vedanta Crossing Station. The suggested New Block Station will be developed as a new one with two loop lines in addition to Railway's upcoming 3rd line. The two loop lines will solely deal with VL plant trains. Necessary isolation facility will be provided to control any unauthorized movement from crossing station towards 3rd line.

As per FM circular 11/2016, for creation of a new station in Block Section, the cost of construction along with staff cost for 10 years is to be borne by M/s Vedanta. As per the proposal all trains to and from DKL station for the Vedanta siding will move on proposed 3rd line. At present, no switch over arrangement is planned at DKL station to transfer trains from DN line to 3rd line and from 3rd line to UP line. With this arrangement, trains to and

from Vedanta siding in SPRD direction will move up-to MNGD station for switchover when required.

6.4 LAYOUT OF NEW BLOCK CABIN

New Block Cabin will have two running lines. The nomenclature of the yard is furnished below.

Nomenclature	Description	CAL in M
Line No.1	Loop Line	CAL= 792.079m (FM TO FM)
Line No.2	Loop Line	CAL= 750m (SRJ TO SRJ)

6.5 DESCRIPTION OF NEW BLOCK STATION:

New Block Station will be developed as a special class station with one cross-over only. The station will be provided with Standard-III Interlocking with provision of Multiple Aspect Colour Light Signal. Single line Token less Block Instrument will be provided for Block Section between DKLU-New Block Station, New Block Station- AMB and New Block Station- Vedanta Crossing station. On the 3rd line, Home Signal will be provided at both ends at a distance of 180 m from the cross-over point and in rear of the Home Signal, Distant Signal will be provided. For movement of trains to and from Plant, Distant, Home and Starter signal will be provided for both directions. Before allowing a train over the 3rd line direction of traffic has to be established.

Interlocking will be so arranged at New Block Station that Station Master/ New Block Station cannot grant Line Clear for a train to AMB after granting Line Clear for a train to DKLU and vice-versa. Block Proving Axle Counter shall be provided at either end of the sections of main line as well as section between New Block Station and Crossing station.

6.6 SYSTEM OF WORKING AT NEW BLOCK STATION:

6.6.1 Working Between DKLU- New Block Station

Before allowing a train towards New Block Station, SM/DKLU will establish Direction of Traffic and ask Line Clear from SM/New Block Station. After obtaining Line Clear from New Block Station. SM/ DKLU will dispatch the train. Interlocking will be so arranged that, SM/ New Block Station can grant such Line Clear only when

no Line Clear has been granted by him to AMB. The same procedure shall also be adopted by SM/ New Block Station while dispatching a train towards DKLU. Interlocking will be so arranged that Starter signal for outgoing trains from Loop lines of New Block Station can only be taken off after receiving Line Clear from DKLU.

6.6.2 Working between AMB- New Block Station

Before allowing a train towards New Block Station, SM/AMB will establish Direction of Traffic and ask Line Clear from SM/New Block Station. After obtaining Line Clear from New Block Station. SM/ AMB will dispatch the train. Interlocking will be so arranged that, SM/ New Block Station can grant such Line Clear only when no Line Clear has been granted by him to DKLU. The same procedure shall also be adopted by SM/ New Block Station while dispatching a train towards AMB.

6.6.3 Working between New Block Station – VL Crossing Station

Running of trains between New Block Station – VL Crossing Station will be governed under Absolute Block System of working in Single Line. Single Line Token Less Block Instruments will be provided at New Block Station & Crossing station. Staff at the new Block station will be deputed by Railway and staff at Vedanta Crossing shall be arranged by M/s Vedanta.

6.7 MOVEMENT OF TRAINS RUNNING OVER 3RD LINE FOR M/s VL.

As per Railway's plan regarding construction of 3rd line, there will be no integration facility at DKLU station between proposed 3rd line and existing DN/UP lines.

As such, Trains meant for M/s VL will move over 3rd line from MNGD only up-to the proposed mid-section Block Cabin from which it will pass towards Vedanta Crossing Station.

Similarly trains originating from M/s VL to move in SPRD direction will run over the 3rd line up-to MNGD from which it can be switched over to UP line or move over the same line further as per operational suitability. Moreover crossing facility is provided at DKLU to arrange crossing of trains running over 3rd line from AMB and MNGD.
