2) Operating cost difference

With or without the project, the demand for transportation, the number of stations and the number of trains needed will basically remain the same, and, therefore, there will principally be no difference in the personnel expenses (personnel both at the stations and on trains) and the power costs.

The differences stated are as follows:

① The security personnel at the railway crossings

Under the Intermediate Program, the railway crossings at 19 points of the central line between Jakarta Kota and Manggarai will be automated. However, there should be at least one security personnel under 3 shifts to be placed at each point even after automation.

② Difference in power cost lies in the additional power cost incurred in detouring during the construction period for the case "with the project," and additional power cost needed for trains negotiating the up-grade of the elevated tracks.

7.3 Benefit Estimation

What can be gained by the results of the Project compared to the condition if the Project is not implemented are called Benefits. The greatest Benefit attributable to track elevation is to be able to resolve the problem of traffic jams at railway crossings.

If level crossings between Jakarta and Manggarai remain in-site, wasted labour and capital caused by road vehicles at railway crossings would become excessive.

7.3.1 Time Saving Benefit

1) Estimation of time-value of vehicles

① Some factors of time value

Time value of road vehicles consists of the following several elements.

i) Availability of vehicles. The vehicles could be used for other purposes if there were no waiting time at crossings.

ii) Passengers' time value

iii) Saving of working capital such as operating personnel, cost of road vehicles and goods carried on trucks

The relationship between the kinds of vehicles and element of benefit is shown below.

Table 7.3.1

Item of Benefit / Kind of Vehicles	Availability of Vehicles	Passengers Time Value	Saving of Operating Personnel Costs	Saving of Cost of Goods Loaded
Sedan	O	O	O	X
Motor cycle	O	O	X	X
Buses	O	O	O	X
Trucks	O	X	O	O
Pedestrians	X	O	X	X

Notes: O = exists
X = does not exist

② Calculating procedures

i) Estimation of the utilized means of transportation by income bracket based on the cost-of-living survey, Jakarta, 1977/1978, is predicated on the following premises.

Premises — The income earner of a family chooses the means of transportation in the following order based on income.

First preference — Sedan cars (incl. jeeps)
Second " — Motor cycles
Third " — Public transportation
Fourth " — Beca
Fifth " — Walking, bicycles

The result of the study indicates the relationship between the means of transportation and incomes (after tax) as shown below:

Table 7.3.2

(Unit = Rp.)

Means of Trans-portation used	Average Monthly Income of Family	Average Number in Family	Average Monthly Income per Head of Family	Average Number of Wage-Earners in the Family	Monthly Income per Wage-Earner
Sedan	271,159	Adult 3.85	70,457	1.93	140,964
Motor cycle	133,390	Adult 3.72	35,889	1.81	73,643
Public transport	82,535	Adult 3.36 All family 5.37	24,555 15,382	1.64	50,326
Beca	65,000	All family 5.33	12,207	1.52	42,713
Pedestrian bicycle	38,575	All family 4.52	8,544	1.32	29,216

ii) Estimation of passengers' time-value

The passengers' time-value is estimated on the following premises.

- Sedans, taxis, motor cycles are the means of transportation of the income earners (Note 6)
- The passengers of buses & minibuses are 90 % adults and 10 % children (Note 7)
- Bajaj is used by adults only in those families using sedans and motor cycles
- Income per hour
  = monthly income per passenger/average monthly working hours x adjustment value for non-working hours
- Average weekly working hours (DKI average of men & women) (Note 8)
  = 46.6 hrs.
  Average yearly working hours = 46.6 x 52 = 2,426.6 hours.
  Average monthly working hours = 2,426.6/12 = 202.2 hrs.
- Working hour ratio = working hours/active hours = 46.6/(12 hrs. x 7 days)
  = 0.55
- Time-value of non-working hours is 1/4 (Note 9) of time-value of working hours
  ∴ Adjustment value for non-working hours = 0.55 + 0.45 x 0.25 = 0.66

	Time	Time-value
Working time	0.55	1
Non-working time	0.45	0.25

– The time-value per head in 1977 was compared with the time-value per head in 1981 by the use of the Consumer Price Index (CPI). 1977 was rated as 100, and the index for 1981 is 173.74 (Note 10).

Table 7.3.3

(Unit: Rp.)

	Passengers' Time-value			
	Time-value per Head		Average Number of Passengers	Passenger Time-value per Unit of Vehicle
	Value in 1977	Value in 1981		
Sedan	460	800	1.87	1,495
Taxi	460	800	1.2	960
Motor cycle	240	417	1.37	571
Bus	77	134	52	6,970
Mini bus	77	134	8.6	1,152
Bajaj	174	301	1.0	301
Beca	40	69	1.6	110
Pedestrian	28	49	1.0	49

(Note 6) The average number of passengers is based on adults only.
(Note 7) PPD data
(Note 8) Source: Labor Force Situation in Indonesia, 1979
(Note 9) World Bank data
(Note 10) Source: Indikator Ekonomi, April 1981

iii) Estimation of time-value of vehicle personnel

Based on the information obtained through personal interviews with the personnel as well as the data of PPD & DKI (Note 11), the time-values of personnel were estimated as follows:

Table 7.3.4

(Unit: Rp.)

	Drivers' Time-value	Number of Drivers	Conductors' or Assistants' Time-value	Number of Conductors or Assistants	Personnel Time-value (Total)
Sedan	90	0.2			90
Taxi	450	1		0	450
Bus	371	1	371	2	742
Mini bus	448	1	70	0.3	518
Bajaj	255	1		0	255
Truck	500	1	200	1	700
Beca	226	1		0	226

(Note 11) Survei Social Economi Nasional 1980 di DKI Jakarta

iv) Estimation of vehicle cost per hour

Table 7.3.5

(Unit: Rp.)

	Representative Type of Vehicle	Economic Price (Note 12)	Total Hours Used	Vehicle Cost per Hour
Sedan	2,000 cc medium-size car	6,442,560	6,000	1,074
Taxi	1,200 cc small-size car	5,739,960	6,000	957
Motor cycle	70 cc	527,000	4,000	132
Bus	Bus with capacity of 45 persons	30,750,000	10,000	3,075
Mini-bus	Average between 87 % of microbus & 13 % of mini-bus	3,370,000 13,600,000	10,000	473
Bajaj		1,000,000	10,000	100
Truck	5,700 cc	17,500,000	10,000	1,750

(Note 12) Net price after deducting import duty, MPO & registration tax from the on-road-price. Information obtained from a dealer.

v) Estimation of financial savings to truck loads

The early arrival of trucks due to clearance of traffic jams at railway crossings results in a financial savings. (Interest may be charged on the value of the loads.) The average weight and average value of truck loads in Jakarta are estimated as follows.

Kind of loads	Portion in all truck loads	Average price '000' Rp./ton
Food	95.4 %	303
Textile	0.6 %	4,559
Estate	0.2 %	899
Construction materials	1.3 %	72
Chemistry	0.1 %	363
Mining	2.4 %	86
Average	100.0 %	321

Note: Data source : Highway Transport Traffic Agency Jakarta
: Indicator Economika

Average weight of truck loads = 2.5 t/truck

The financial savings are estimated by the following calculation formula.

Saved financial cost

= average price of truck loads x interest rate per hour

= 321,000 x 2.5 x 0.16 ÷ 2,426.6 = 53

vi) Time value of vehicles

Time values of vehicles are summed up below in Table 7.3.6.

Table 7.3.6

	Passengers' time value	Personnel cost	Vehicle cost	Cost of truck loads	Time value of vehicles
Sedan	1,495	90	1,074	0	2,659
Taxi	960	450	957	0	2,367
Motor cycle	571	0	132	0	703
Bus	6,970	742	3,075	0	10,787
Mini bus	1,152	518	473	0	2,143
Bajaj	301	255	100	0	656
Truck	0	700	1,750	53	2,503
Beca	110	226	–	0	336
Pedestrian	49	0	0	0	49

③ Increase of time-value

The time-values of the users of transportation means in Indonesia are still at a low level. Considering the following factors, time-values theoretically increase in proportion to the net income, of the user.

i) The utilized time-value of the means of transportation is relative to the time-value of net earnings.

ii) The net unemployment rate is relatively low, so the time saved might not be wasted.

2) Estimation of time saving benefit

The following 2 benefits are considered in the study.

① Time saving benefit of road vehicles at railway crossings

Track elevation can change level crossings to grade-separated crossings and road traffic which was previously interrupted at crossings can flow smoothly, so vehicles can reach their destinations earlier.

This benefit can not only be enjoyed by passengers but will also influence the availability of vehicles, operating labour and goods carried on trucks.

This benefit is calculated by the following equations.

Benefit = blocked time benefit + stop time benefit

Blocked timed benefit

$$= \sum_{i=1}^{m} (\text{average blocked time}_i \times \sum_{j=1}^{n} (\text{blocked traffic volume}_j \times \text{vehicle time value}_j))$$

Stop time benefit

$$= \text{average stop time for glance} \times \sum_{i=1}^{m} \sum_{j=1}^{n} (\text{traffic volume}_{ij} \times \text{vehicle time value}_j)$$

m = number of crossings (excluding flyover)

n = number of kind of vehicles

② Time saving benefit of railway passengers

In case of "With Project" there is no need for train operators to give attention to road traffic or to reduce speed or stop at crossings, which will result in shorter train operation times.

This benefit is calculated by the following formula.

Benefit = Time value of passenger x

(commuter time in "without" case – commuter time in "with" case)

7.3.2 Fuel-saving Benefit

All cars must stop once at the railway crossings for a glance and accelerate again. All cars stay idle at the crossings when they are closed resulting in consuming extra fuel. On the other hand, in the case of a flyover, the car needs extra fuel to negotiate the slope of the bridge. In case the project is implemented, such fuel waste could be avoided.

The following table shows the extra fuel needed per vehicle.

Table 7.3.7

	Extra Fuel (cc) Needed at the Railway Crossing	Extra Fuel (cc) Needed for Using a Flyover (Note 13)	Remarks
Sedan	7	9.6	Same with jeeps & taxis
Motor cycle	2	5.0	
Bus	7	13.4	Same with mini-bus in terms of gasoline
Truck	8	12.0	In terms of gasoline

(Note 13) The assumed speed = 50 km/h (climbing 180 m on a slope of 3 %)

7.3.3 Benefit of Averting Accidents at the Railway Crossing Points

Accidents at the railway crossings can be averted by elevating the railways and removing the level crossings.

The benefits in this connection are the avoidance of the following:

① Endangerment to human life

② Damage to vehicles & railway facilities at the crossing

③ Delayed train schedules

1) Estimation of the average number of accidents

According to PJKA accident statistics, which cover only manual operating railway crossings, two crossing accidents have occurred per year during the last two years between Jakarta Kota and Manggarai. Because all crossings in this section will be automated by the Intermediate Program, the above mentioned statistics cannot be used. Therefore, in this study we shall use the following formula, based on that used to estimate the number of accidents at automated crossings in Japan, that we have adjusted for use in Indonesia.

Annual average number of accidents in this section = $0.000812 \times \sum_{R=1}^{\ell} (Y^{0.7932} \times Z^{0.2542})$

Y = Number of trains passing through the crossings

Z = Road traffic volume at the crossings

ℓ = Number of crossings

It seems to be unusual that more than 10 accidents occur in the 19 crossings in this section in the light of normal train operation control. Therefore it is assumed that no more than 10 accidents per year will happen now and in the future.

2) Accident statistics of PJKA

The following statistics are used in estimating average damage per accident.

Table 7.3.8

Accident Statistics \ Value	Source of Data	Value
Average death rate (Number of persons killed/accident)	PJKA	0.13
Average rate of injuries (Number of persons injured/accident)	PJKA	0.95
Average value of human life	(Note 14)	23,760 (thousand Rp.)
Average rate of car damage (Number of cars damaged/accident)	PJKA	0.9
Average value of damage to cars	(Note 15)	4,985 (thousand Rp.)
Average value of damage to facilities at the railway crossing	PJKA	40 (thousand Rp.)
Average rate of vehicle (train) damage (Number of vehicles/accident)	PJKA	0.87
Average value of damage to vehicles		10,400 (thousand Rp.)
Average length of time for recovery of normally-scheduled operations (Minutes)	PJKA	21.1

(Note 14) Human life value = average annual income x average number of years employed/2.
Average annual income is the net of the weighted average annual income of the passengers and personnel who are involved in the accident, minus their necessary annual expenses. Average number of years employed is 30 years.

(Note 15) The weighted average value was obtained on the basis of the following ratios of vehicle accidents. The price used is 1/2 that of a brand new vehicle.
Sedan (40 %), Truck (7 %), Pick-up (20 %), Tricycle (16 %),
Motor cycle (14 %), Bus (3 %)

3) Estimation of benefit from avoidance of crossing accident.

① Direct benefit (7.3.3.①, 7.3.3.②)
= number of accident x average amount of damage

② Indirect benefit (7.3.3.③)
= number of accident x total train delayed time x average number of passenger per train x time value of passenger

7.3.4 Land use benefit

Land use benefit consist of the following:

① Utilization benefit of the space under the elevated track.

② Benefit stemming from promoting the more productive use of land around railway stations.

In order to be conservative in calculating benefits, the 2nd type of benefit is omitted here.

The following are estimates of available space under the elevated track, by usage.

Usage	Station Facilities	Station Plaza	Commercial Facilities	Warehouse
Space	15,000 m^2	8,200 m^2	24,700 m^2	3,700 m^2

The following indices, which indicate the productivity of each land usage, are utilized as a measurement in estimating land use benefit.

Usage	Measurement of productivity	Yearly value (Rp/m^2)
Commercial use	Gross sales profit	185,600 (Note 16)
Residential use	Housing rent	3,000 (Note 17)
Service business use	Warehouse rent	18,250 (Note 18)

(Note 16) Data from the retail store

(Note 17) Buku Petunjuk Pelaksanaan (DINAS PERUMAHAN)

(Note 18) Data from Pergudangan Pemerintan di CAKUNG (PPC)

7.4 Evaluation

7.4.1 Characteristics of the project

The Project is a part of the whole railway improvement Project in JABOTABEK area. Therefore even if the project is not implemented we cannot assume that no improvement will take place; many improvements already mentioned in 7.1.1 will have to be carried out for harmonious development in this area. We can often find that improvement of an old facility costs more than complete renewal of the old facility.

In the Project we can also find the case of improving the existing station and constructing flyovers, instead of elevating the tracks.

As a result, the construction cost "Without the project" does not seem to be small enough compared with the construction cost "With the project" resulting in a high level of EIRR.

In other word, this fact show that the project is well timed considering the Master Plan in the range beyond 2000.

7.4.2 Indices for evaluation

It is already stated that EIRR is used as the general index in the study.

It is good index as it integrates the following evaluation indices into one index in terms of price and adjusts the value difference between years using the discount rate.

1) Scale and difficulty of the construction procedure. (including assurance of safe construction.)
2) Land space required for construction and difficulty in the acquisition of land.
3) Operating and maintenance costs.
4) Requirement for alternative transportation.

The following 3 indices are included in Table 7.4.2 because EIRR does not represent some aspect of the 3 indices as set out below.

Table 7.4.1

Aspects / Indices	The aspect which is already counted in EIRR	The aspect which is difficult to be materialized
Completion year of the construction (Construction period)	① The longer the construction period becomes, the smaller the construction cost is evaluated relatively. ② Late completion of the construction generates the benefit later than original plan.	Strategic effects of early completion of the construction
Acquisition of land	The rise in construction costs is needed if larger land space is required for construction	The degree of preparation of land required for four track line in the future
Manner of passenger transportation during construction period	① The investment in buses and Western Line & Eastern Line for alternative transportation required during construction period ② The operating cost of alternative transportation ③ Lost time due to detouring during the construction period	Negative influence on recent tendency for the number of railway passengers to increase due to suspension or limitation of train operation.

Although the following 2 indices are taken into consideration in calculating EIRR, they are set out in Table 7.4.2 because they are important policies in Indonesia.

① Creation of job opportunities
How many job opportunities are created by the project compared to "Without the project"?

② Energy saving effect
How much oil consumption is saved by the project compared to "Without the project."

All these indices are set out in the next table.

Table 7.4.2

Indices \ Alternatives		Alternative A	Alternative B	Alternative C
EIRR		23.8 %	17.2 %	15.5 %
Supplimental Indices	Completion year of the construction (Construction period)	January 1991 (6 years 1 month)	April 1989 (4 years 4 months)	April 1989 (4 years 4 months)
	Degree of preparation of land required for four track line in the future	20 %	60 %	70 %
	Manner of passenger transportation during construction period	Buses and additional operation of Western & Eastern Line are needed	Several long-distance train operations must be cut off	No change is needed
Sub indices	Creation of job op-oportunities during construction period	11,020 Mil Rp (4.8 Mil person-day)	11,837 Mil Rp (5.2 Mil person-day)	12,268 Mil Rp (5.3 Mil person-day)
	Energy saving effect (yearly average)	477 Mil Rp (4,543 Kl)	458 Mil Rp (4,362 Kl)	458 Mil Rp (4,362 Kl)

Note: Alternative A = Pertial supspension proposal
(Cashflow Analysis is set out in Appendix Table - A.)
Alternative B = Single track operation proposal
(Cashflow Analysis is set out in Appendix Table - B.)
Alternative C = Double track operation proposal
(Cashflow Analysis is set out in Appendix Table - C.)

7.4.3 Evaluation of the 3 alternatives

It is general that social capital cost be utilized as the evaluation standard of EIRR. According to the hearing conducted in the study on the Master Plan last year, the social capital cost is around 13 % p.a. for the railway project in Indonesia. High level EIRR is better but it is more important whether EIRR exceeds this standard.

In the light of this standard, all alternatives are favorable. At this stage, the supplimental indices mentioned before become more important for evaluation.

The following table shows a qualitative evaluation of each alternative by these indices.

Table 7.4.3

Supplimental Indices	Alternative A	Alternative B	Alternative C
Strategic effects of early completion of the construction	X	O	O
Degree of preparation of land required for four track line in the future	X	Δ	O
Negative influence on the recent tendency for the number of railway passengers to increase due to suspension or limitation of train operation	X	Δ	O

O : good
Δ : medium
X : poor

7.4.4 Sensitivity analysis

Although all estimates used in the study have no difinite value but some range, we treated them here as if they do have a difinite value.

In this section sensitivity analysis is executed by changing key parameters of alternative C that highly influence EIRR such as Construction cost, road traffic volume, and the number of flyovers constructed, to the pessimistic end of the parameter.

The results (EIRR) are shown below.

Table 7.4.4

		Construction cost	
Road traffic volume	Condition of construction of flyover	110 %	120 %
90 %	Unchanged	14.2 %	13.4 %
80 %	Cut off the construction of Jl. Sukarjo's flyover	13.8 %	13.0 %

Note: Cashflow Analyses are set out in Appendix Table - C1, Table - C2, Table - C3, Table - C4.

We can conclude that even in the worst case, that is to say, when there are 20.% cost overruns and a 20 % reduction of road traffic volume from the base case and a Cut off of flyover at Jl. Sukarjo, the project is still viable enough to exceed the EIRR standard.

CHAPTER 8. FINAL CONSIDERATION

CHAPTER 8 FINAL CONSIDERATION

8.1 Final Consideration on Alternatives

Three alternative proposals were set forth as planning of track elevation work on the existing line in Chapter 5.

They differ from one another in (1) method of construction, (2) construction period, (3) measures for handling passengers during construction period, (4) difficulty in land purchase and (5) investment scale, consequently in economic internal rate of return (EIRR) which is a result of economic evaluation.

Which alternative to recommend on the basis of the above features mentioned in para. 7.4 calls for a prudent consideration in the light of present and future situations of the Central Line in the Jakarta Metropolitan Area.

i) Alternative A:

Train operation is to be suspended for a long period of time, 6 years 1 month in total; for 3 years 9 months on the Jakarta Kota-Gambir sector to be constructed in the first period and for 2 years 4 months on the Gambir-Manggarai sector in the second period. This alternative is characterized by safe construction work of elevated track structures as well as by the smallest investment scale with the biggest EIRR among the three alternatives.

Similar alternative to Alternative A is Alternative No.1 shown in Table 5.2.1 (total suspension of train operation on the whole line during construction period). Somewhat smaller in investment scale than Alternative A, this alternative requires a construction period of approx. 3 years 6 months, shorter than Alternative A, and its EIRR seems bigger than that of Alternative A.

In either case, however, fall of passenger service is inavoidable. If Alternative A is adopted; during the first construction period (3 years 9 months), substitute transportation by buses will have to be provided for passengers who go beyond Gambir Station, and during the second construction period (2 years 4 months) when shuttle service of electric trains will have started between Jakarta Kota Station and Gambir Station, detour train operation via the Eastern Line and substitute transportation by buses from Manggarai Station are needed for passengers between Gambir Station and Manggarai Station; accordingly, facilities for boarding and detraining passengers and bus parking lot are necessary at Gambir Station in the first period and at Manggarai Station in the second period.

In case of total suspension of train operation, all railway service is to be discontinued between Jakarta Kota Station and Manggarai Station; consequently, for boarding and detraining passengers at Manggarai Station as well as for passengers going beyond Manggarai Station.

Detour train operation via the Western and Eastern Lines and of substitute

transportation by buses from Manggarai Station are needed. For prividing the substitute bus transport, countermeasures should be taken. Passageway to Manggarai Station West Gate and bus parking lot should be newly installed or improved and city roads should be widened.

On the other hand, now that the Intermediate Program decided by the government is going on for purpose of strengthening railway transport capacity in the JABOTABEK Area as measures to improve metropolitan public transportation, it is judged as quite difficult for reasons of policy to adopt partial suspension or total suspension, though it is temporary, which leads to cut of railway transport capacity. This issue comes within the category of highly political decision.

ii) Alternative B:

Due to single track operation during construction period instead of present double track operation, part of passengers should be transported through a detour route via the Eastern Line, which is more or less inconvenient for passengers. Such handling of train operation involves a possibility of train operation accidents. Construction work is attended with danger because of construction in proximity to running trains and to impressed overhead lines. As countermeasures, it will take one month or more to educate and train beforehand train crews and construction workers with regard to safety. Furthermore, a considerable period of time for education and training during construction will be needed.

But this alternative is considered as recommendable from the fact that its investment scale, construction period and EIRR rank all middle among the three alternatives. Dangerous aspect of construction work is considered as acceptable from the view point that it gives an opportunity to further improvement of technical skills for train operation and construction work.

iii) Alternative C:

It is the greatest in investment scale and the smallest in EIRR among the three alternatives but its difference from Alternative B is not so large.

This alternative was adopted at the stage of the Master Plan study prepared by JICA in March 1981. Its feature lies in the fact that it secures the land for track addition in the vacant site after removal of existing tracks upon completion of elevated tracks.

If four-track conversion on the Central Line would be adopted as a policy to cope with increased transport demand expected around the year 2000, the required land can be now acquired in anticipation of future expansion. Dangerous aspect to workers during construction is the same as in the case of Alternative B.

Taking into account politic purpose of preceding investment, it is desirable to adopt Alternative C, although more difficulties in land purchase are expected than with Alternative B.

8.2 Measures to be Taken Prior to Execution of Project

In either case of the proposed three alternatives for continuous grade separation plan on the Central Line, necessary actions should be taken for the following items prior to execution of the plan, in the light of the results of study and analysis on the actual situation of the areas along the line.

8.2.1 Land

As mentioned in Chapter 2, the purpose of survey on land utilization along the Central Line is not only to grasp the actual situation and features in the concerned area but also to intend to settle several problems from the viewpoint of city planning.

According to the survey results, it is important to take into consideration without fail the following four points prior to execution of the project.

i) Removal of houses standing in the right of way:
As mentioned in Chapter 2, there are many barrack-like houses of low income bracket in the right of way for the Central Line. Their number reaches approx. 1,000 according to the survey results, which show intense concentration between Jl. Mangga Dua and Jl. Mangga Besar (see Fig. 2.1.1) with roughly estimated 370 houses and lots.
These houses are constructed of quite plain materials and a family of 5 ∿ 6 persons lives in a space less than 20 m^2. The right of way is used as gateway to house, garden, lumber store area or playground for children. The situation of the other areas is the same as shown in Fig. 2.1.1 ∿ 2.1.4.
The right of way, closely related with the management of the concerned route, plays an indispensable part in installation and improvement of various facilities required for functional maintenance of train operation which aims at safe, rapid and economical mass transport of passengers or freights. In short, it is a land to be placed at exclusive service of the railway.
Under the existing circumstances, as train operation is attended with possibility of traffic accident and of damage to the facilities, slow down of trains is seen to avoid such dangers; the railway does not fulfil its function of rapid mass transport means which is a mission appointed to the railway. Therefore, adequate measures should be set up to remove houses standing in the right of way in view of restoration to exclusive use of the railway.
Outside the actually possessed right of way, service roads running parallel with the track are also required for transport of construction materials and equipments at the time of construction work. Therefore, houses standing in the right of way must be removed prior to commencement of construction work.

ii) Land purchase for service roads:
In either case of Alternatives A, B and C, execution of construction work on schedule calls for acquisition of at least 4-meter wide road parallel with the existing Central Line for the purpose of running of numerous heavy equipments

and of taking out of earth and sand during construction period as well as of transport to the site of enormous construction materials (temporary scaffolding piles, concrete, formwork, reinforcing bars, etc.). In the area as shown in Chapter 5 Fig. 5.2.8, where existing roads run parallel with the Central Line, it will be possible to divert a part of width of the said roads to service roads, but in other areas, land must be newly purchased as shown in Fig. 5.2.8.

iii) Road network planning in presupposition of the Central Line Railway Project:
As shown in Capter 2 Fig. 2.2.1, road network program as a part of city planning is studied in the area covered by the Central Line. For planning of roads running parallel with the Central Line, a particular attention should be paid to future role of the railway in urban public transportation upon completion of elevated tracks.

Main functions of these raods are considered as follows:

- Together with the elevated Central Line, they will have a function as north-south trunk road to become an axis for formation of future urban area.
- They will serve as buffer zone on the both sides of the railway.
- Facilitating the access to the railway, they will stimulate demand increase of railway passengers and contribute to formation of sub-city-center with a core of railway terminal station.

In consideration of future importance of the railway in the formation of urban area, planning of road construction, especially around railway station, should be based on the railway planning to ensure harmonious coexistence of the railway with the road. The layout of specific station and road is suggested in Chapter 2 Para. 2.2.3 Fig. 2.3.4.

iv) Prior measures related to regulation of land use:
As mentioned in Chapter 2 Para. 2.2.4, from the viewpoint of city planning, land utilization upon completion of elevated tracks includes acquisition of the required land for track addition corresponding to increased railway traffic volume around the year 2000 and regulation of land use as a part of environmental preservation against elevated railway.
The former calls for restriction such as prohibition of construction of permanent buildings along the line (within approx. 20 m away) and the latter needs the following countermeasures.
After completion of elevated tracks, the environment will be considerably improved as compared with present situation, but there is a possibility that the standard for environmental preservation will be made severer in future. The noise is considered as main object under strict standard.
It is desirable to minimize the investment on environmental improvement by adopting beforehand the restrictive measures on the method of future land utilization.
In Chapter 2 Fig. 2.4.2 are shown the areas established as a) residential area, b) areas where stand educational and medical facilities and c) areas around

mosque or church. Although, in these established areas, counter-measures against noise source or sound-proofing measures for existing facilities must have recourse to available techniques, it would be better to restrict, the method of land use in advance taking effect on avoidance of environmental trouble in future in the area along the railway. For example, building of residencial houses, schools and medical facilities should not be permitted in the area along the railway (within at least 50 m away), which should be used for green belt such as park, roads or warehouses. Prior legislation to this effect is necessary.

8.2.2 Electric power and signalling/telecommunication

i) Transfer of obstructive electric facilities prior to civil work:
In either case of Alternatives A, B and C, prior to start of civil work, protection or transfer of obstructive articles should be made with regard to existing electric facilities and signalling/telecommunication facilities which may interfere with going in and out of large trucks for transport of materials and running of heavy equipments for foundation work and structural work of elevated track structures, needless to say safety protection for workers against high-tension distribution line.
For this purpose, the situation of existing electric facilities, signalling and telecommunication facilities along the Central Line must be beforehand studied and grasped and on the other hand, close preliminary communication and coordination are essential between responsible person charged with construction work and management people for electric and signalling/telecommunication facilities.
In addition, actual conditions should be beforehand grasped with regard to municipal facilities such as water works, sewerage and telephone facilities.

ii) Electric power supply by PLN (Perusahaan Listic Negara):
It goes without saying that supply of enough electric power by PLN is indispensable to execution of the " Urban/Suburban Railway Transportation in JABOTABEK Area Project " Master Plan (JICA study report in March 1981).
In case of Alternative A or B, countermeasures for passenger transport are necessary during a period of suspension of train operation on the Central Line. Namely, 8-railcar make-up electric trains must be operated through a detour route via the Wester or Eastern Line.
Accordingly, the schedule of equipment investment shown in the Master Plan should be advanced for supply of required electric power and strengthening of electrification facilities.

8.2.3 Improvement of feeder transportation

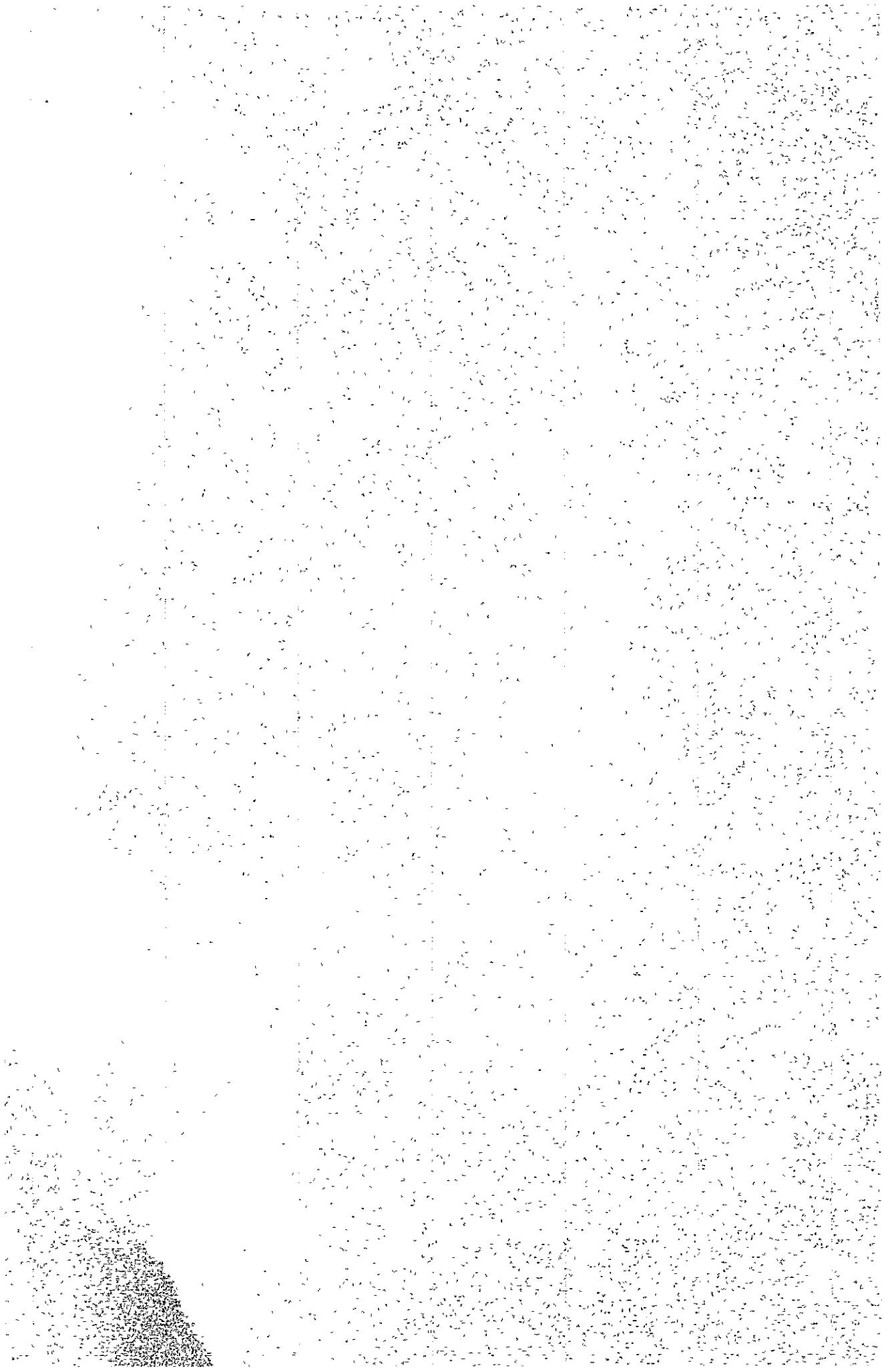
Improvement of station facilities and construction of new stations for track elevation work are stated in detail in Chapter 2 in accordance with the demand forecast of railway passengers. Such plannings are no more than the countermeasures of the railway

against expected increase of railway passengers. To ensure effective use of the railway in the Jakarta Metropolitan Area, in other words, to render the railway a backbone of metropolitan public transportation in future, it is necessary at the same time to establish feeder transportation for railway users at each station. To facilitate the access to the railway, station-front-areas should be fully equipped with parking lots for various vehicles such as bajaj, beca, taxi and bus, and total road transportation plan should be also set up to link the railway terminal stations with public bus service network which complements the railway.

8.3 Earlier Commencement

In case of earlier commencement of the construction than 1985, a result of economic evaluation would be almost as same as the result concluded in this study report. In other words, it would be as viable and feasible as the construction schedule proposed in this study report.

APPENDIX



ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
1.	Gambir	11.	Central Jakarta	1.	Gambir	01.	Gambir
						02.	Kebon-Kelapa
2.	Cideng					03.	Cideng
						04.	Duri-Pulau
						05.	Petojo Utara
						06.	Petojo Selatan
3.	Sawah-Besar			2.	Sawah-Besar	01.	Mangga-Dua Selatan
						02.	Karang-Anjar
						03.	Kartini
						04.	Gundung-Sahari
4.	Pasar Baru					05.	Pasar-Baru
5.	Kemayoran			3.	Kemayoran	01.	Gn.Sahari Selatan
						02.	Kemayoran
						03.	Kebon Kosong
						04.	Serdang
						05.	Harapan Mulya
6.	Senen			4.	Senen	01.	Senen
						02.	Kwitang
						03.	Kenari
7.	Kramat					04.	Kramat
						05.	Paseban
						06.	Bungur
8.	Cempaka-Putih	11.	Central Jakarta	5.	Cempaka-Putih	01.	Tanah-Tinggi
						02.	Johar-Baru
						03.	Galur
						04.	Kampung-Rawa
						05.	Rawasari
						06.	Cempaka Putih Barat
						07.	Cempaka Putih Timur

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
9.	Cikini	11	Central	6.	Menteng	01.	Kebon Sirih
			Jakarta			02.	Gondangdia
						03.	Cikini
10.	Menteng					04.	Menteng
						05.	Pegangsaan
11.	Kebon Melati			7.	Tanah-Abang	01.	Kampung Bali
						02.	Kebon Kacang
						03.	Kebon Melati
12.	Karet Tengsin					04.	Petamburan
						05.	Karet Tengsin
						06.	Bendungan Hilir
13.	Gelora					07.	Gelora
14.	Muara	12.	North-	1.	Penjaringan	01.	Kamal Muara
			Jakarta			02.	Kapuk Muara
15.	Pejagalan					03.	Pejagalan
						04.	Penjaringan
						05.	Muara Angke
16.	Mangga Dua Utara					06.	Mangga Dua Utara
17.	Pedemangan					07.	Pedemangan Barat
						08.	Pedemangan Timur
18.	Sunter			2.	Tanjung Priok	01.	Sunter
19.	Tanjung Priok					02.	Pepanggo
						03.	Sungai Bambu
						04.	Kebon Bawang
						05.	Tanjung Priok
				3.	Koja	01.	Koja Utara
						02.	Koja Selatan
						03.	Lagoa
						04.	Tugu

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
		12	North			05.	Rawa Badak
20	Pegangsaan-Dua		Jakarta			06.	Kelapa Gading
						07.	Pegangsaan Dua
21.	Cilincing			4.	Cilincing	01.	Kali Baru
						02.	Cilincing.
						03.	Semper
						04.	Marunda
						05.	Sukapura
22.	Semanan	13.	West Jakarta	1.	Cengkareng	01.	Semanan
						02.	Duri Kosambi
						03.	Rawa Buaya
23.	Kali Deres					04.	Kamal
						05.	Tegal Alur
						06.	Pegadungan
						07.	Kali Deres
24.	Cengkareng					08.	Cengkareng
						09.	Kapuk
						10.	Kedawung Kali Angke
25.	Grogol			2.	Grogol-Petamburan	01.	Grogol
						02.	Jelambar
						03.	Tanjung Duren
						04.	Tomang
26.	Palmereah					05.	Jati Pulo
						06.	Kota Bambu
						07.	Slipi
						08.	Palmerah
27.	Mangga Besar			3.	Taman Sari	01.	Pinangsia
						02.	Mangga Besar
						03.	Tangki

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
		13	West			04.	Glodok
28.	Taman Sari		Jakarta			05.	Keagungan
						06.	Krukut
						07	Taman Sari
						08.	Maphar
29.	Tambora			4.	Tambora	01.	Pekojan
						02.	Malaka
						03.	Tambora
						04.	Jembatan Lima
						05.	Angke
						06.	Jembatan Besi
						07.	Krendang
						08.	Tanah Sareal
						09.	Duri
						10.	Kali Baru
30.	Kembangan			5.	Kebon Jeruk	01.	Kembangan
						02.	Kedoya
						03.	Duri
						04.	Meruya Ilir
31.	Kebon Jeruk					05.	Meruya Udik
						06.	Jogla
						07.	Serengseng
						08.	Kebon Jeruk
						09.	Sukabumi Ilir
						10.	Kelapa Dua
						11.	Sukabumi Udik
32.	Tebet	14.	South Jakarta	1.	Tebet	01.	Menteng Dalam
						02.	Tebet Barat
						03.	Tebet Timur

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
		14.	South			04.	Kebon Baru
33.	Manggarai		Jakarta			05.	Bukit Duri
						06.	Manggarai Selatan
						07.	Manggarai
34.	Setiabudi			2.	Setiabudi	01.	Setiabudi
						02.	Guntur
						03.	Karet
						04.	Karet Semanggi
						05.	Karet Kuningan
						06.	Kuningan Timur
						07.	Pasar Manggis
						08.	Menteng Atas
35.	Mampang-Prapatan			3.	Mampang-Prapatan	01.	Kuningan Barat
						02.	Mampang Prapatan
						03.	Pela Mampang
						04.	Tegal Parang
						05.	Bangka
						06.	Pancoran
						07.	Duren Tiga
						08.	Kali Bata
						09.	Cikoko
						10.	Pangadegan
						11.	Rawa Jati
36.	Pasar Minggu			4.	Pasar Minggu	01.	Pejaten
						02.	Pasar Minggu
						03.	Tanjung Barat
						04.	Jati Padang
						05.	Rangunan
						06.	Cilandak

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
		14	South Jakarta			07	Jaga Karsa
						08	Lenteng Agung
						09	Serenseng Sawah
						10	Cianjur
37	Kebayoran Baru			5	Kebayoran Baru	01	Senayan
						02	Rawa Barat
						03	Selong
						04	Gunung
						05	Kramat Pela
						06	Melawai
						07	Petogogan
						08	Pulo
						09	Gandaria Utara
						10	Cipete Utara
38	Kebayoran Lama			6	Kebayoran Lama	01	Grogol Utara
						02	Grogol Selatan
						03	Cipulir
						04	Petukangan Utara
						05	Petukangan Selatan
						06	Ulujami
						07	Pasangrahan
						08	Kebayoran Lama
						09	Pondok Pinang
						10	Bintoro
39	Cilandak			7	Cilandak	01	Gandaria Selatan
						02	Cipete Selatan
						03	Cilandak
						04	Lebak Bulus
						05	Pondok Labu
40	Kebon Manggis	15	East Jakarta	1	Matraman	01	Kebon Manggis

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
41.	Kayu Manis	15.	East Jakarta	1.	Matraman	02.	Pal Meriam
						03.	Kayu Manis
						04.	Utan Kayu
						05.	Pisangan Baru
42.	Pulo Gadung			2.	Pulo Gadung	01.	Kayu Putih
						02.	Jati Rawamangun
						03.	Pisangan Timur
						04.	Cipinang
						05.	Pulo Gadung
						06.	Jatinegara Kaum
43.	Cipinang-Besar			3.	Jatinegara	01.	Kampung Melayu
						02.	Kali Mester
						03.	Bidara Cina
						04.	Cipinang Cempedak
						05.	Rawa Bangke
						06.	Cipinang Muara
						07.	Cipinang Besar
44.	Kelender					08.	Pondok Bambu
						09.	Kelender
						10.	Durent Sawit
						11.	Malaka
						12.	Pondok Kelapa
45.	Kramat Jati			4.	Kramat Jati	01.	Cawang
						02.	Cililitan
						03.	Kramat Jati
						04.	Kebon Pala
						05.	Batu Ampar
						06.	Bele Kambang
						07.	Makasar

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
		15	East Jakarta			08	Kampung Tengah
						09	Dukuh
						10	Cipinang Melayu
						11	Halim Perdana Kusu-
							ma
46	Pasar Rebo			5	Pasar Rebo	01	Gedong
						02	Rambutan
						03	Susukan
						04	Ciracas
						05	Cijantung
						06	Baru
						07	Kali Sari
						08	Pekayon
						09	Lobang Buaya
						10	Cegar
						11	Bambu Apus
						12	Setu
						13	Cipayung
						14	Kelapa Dua Wetan
						15	Munjul
						16	Cilangkap
						17	Cibubur
						18	Pondok Ranggun
47	Cakung			6	Cakung	01	Rawa Terate
						02	Jatinegara
						03	Penggilingan
						04	Cakung
						05	Ujung Menteng
						06	Pulo Gebang

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
48.	Tangerang	21.	Tangerang	101.	Tangerang		
				102.	Batuceper		
				103.	Teluknaga		
49.	Cikupa			104.	Sepatan		
				105.	Mauk		
				106.	Rajeg		
				107.	Kronjo		
				108.	Pasar Kamis		
				109.	Kresek		
				110.	Balaraja		
				111.	Tigaraksa		
				112.	Cikupa		
				113.	Curug		
50.	Serpong			114.	Serpong		
				115.	Legok		
51.	Ciputat			116.	Ciputat		
				117.	Ciledug		
52.	Depok	22.	Bogor	201.	Sawangan		
				202.	Depok		
53.	Cibinong			203.	Cibinong		
				204.	Cimanggis		
				205.	Gunung Putri		
54.	Citeureup			206.	Citeureup		
				207.	Jongol		
				208.	Cariu		
				209.	Cileungisi		
55.	Bogor			210.	Bogor		
				211.	Ciomas		
				212.	Semplek		

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
		22	Bogor	213	Kedung Halang		
				214	Cisarua		
				215	Ciawi		
				216	Cijeruk		
56	Parung			217	Parung		
				218	Gunung Sindur		
				219	Rumpin		
57	Leuwiliang			220	Parung Panjang		
				221	Ciampea		
				222	Cibungbulang		
				223	Leuwiliang		
				224	Cigudeg		
				225	Jasinga		
58	Pondok Gede	23	Bekasi	301	Pondok Gede		
59	Bekasi			302	Bekasi		
				303	Talmajaya		
				304	Balelan		
60	Cikarang			305	Tambun		
				306	Cibutung		
				307	Cikarang		
				308	Lemahabang		
61	Setu			309	Setu		
				310	Cibarusa		
62	Sukatani			311	Cabangbungin		
				312	Sukatani		
				313	Pebayuran		

ZONE CODE LIST FOR TRACK ELEVATION OF CENTRAL LINE

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name	No.	Name	No.	Name	No.	Name
63	West Java 1	31	Serang				
		32	Pandeglang				
		33	Rangkasbitung				
64	West Java 2	41	Sukabumi				
		42	Cianjur				
		43	Bandung				
		44	Garut				
		45	Tasikmalaya				
		46	Ciamis				
		47	Majalengka				
		48	Kuningan				
		49	Sumedang				
65	West Java 3	51	Karawang				
		52	Purwakarta				
		53	Subang				
		54	Indramayu				
		55	Cirebon				
66	Central &	61					
	East Java						
67	Sumatera &	62					
	Others						

Appendix Table - A Economic Analysis of Track Elevation for CENTRAL LINE (Partial Suspension Proposal)

(Rp. million)

Case 1

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
INVESTMENT DIFF	10475	9217	5624	1960	2822	3863	-4442	-1337								17			-197						17		1075			-3769
WITH	14076	15776	21089	11529	8114	9370	5									102			25						102		2536			-7552
ELECTRIFICATION	2109	833	1795	748	861	1380																					1751			
SIGNALS & TELECOM	186	40		1143	17	230	5									102			25						102		785			
CIVIL WORK	7920	12057	16421	6734	7236	7760																								
LAND ACQU & COMP	2260	2260	2260	2260																										
OTHERS	1602	585	613	644																										
-SALVAGE VALUE																														-7552
WITHOUT	3601	6559	15465	9569	5292	5507	4447	1337								85			222						85		1461			-3783
RAILWAY	1246	5101	11506	8232												85			222						85		1461			-3783
ELECTRIFICATION	508		1210	975																							743			
TELECOMUNICATION	40		55													85									85					
SIGNALS	699		272	276															222								718			
STATION FACILITY		2115	6860	6981																										
LAND ACQU & COMP		2986	3109																											
-SALVAGE VALUE																														-3783
ROAD FLYOVER	2355	1458	3959	1337	5292	5507	4447	1337																						
MAINT/OPE COST DIF	-79	-79	-79	14	269	363	213	210	210	212	214	216	218	221	224	226	227	229	231	232	234	235	237	239	240	242	242	242	242	242
FACILITY MAINT COST DIF	-104	-104	-104	-31	-31	-31	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156
ELECTLIC FACL	-44	-44	-44				66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
SIGNALS & TELECOM	-24	-24	-24	-41	-41	-41	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
CIVIL	-36	-36	-36	11	11	11	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
OPERATION COST DIF	25	25	25	45	300	394	57	54	53	56	58	60	62	65	67	70	71	73	74	76	78	79	81	83	84	85	86	86	86	86
PSNL COST DIF	25	25	25	45	45	42	42	37	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
ELEC COST DIF					255	352	15	17	19	21	23	25	27	30	33	35	37	38	40	41	43	45	46	48	50	51	51	51	51	51
TOTAL BENEFIT	1836	1956	2110	2891	1277	894	9858	9704	9824	10384	10987	11619	12295	12995	13808	14675	15483	16352	17288	18296	19380	20546	21800	23149	24599	26157	27826	28354	29547	30805
TIME SAVING BENEFIT	1617	1728	1846	2512	832	428	4193	4045	4149	4665	5224	5932	6491	7205	7978	8815	9608	10462	11382	12374	13441	14591	15828	17159	18590	20129	21193	22317	23503	24756
BENE OF RAILWAY PASS					-1854	-2229	1350	1653	1987	2352	2753	3190	3668	4190	4759	5378	5960	6590	7272	8009	8807	9669	10599	11604	12687	13856	14632	15452	16317	17231
BENE OF ROAD VEHICLE	1617	1728	1846	2512	2686	2657	2843	2392	2163	2312	2472	2642	2822	3014	3219	3437	3648	3872	4110	4364	4635	4922	5229	5555	5903	6273	6561	6865	7186	7525
SEDAN	682	744	811	1320	1433	1487	1611	1354	1283	1385	1494	1610	1735	1868	2010	2161	2296	2439	2592	2754	2928	3113	3310	3520	3744	3983	4172	4371	4581	4803
TAXI	118	124	131	197	207	210	223	180	160	170	180	191	203	215	228	242	257	273	289	307	326	347	368	391	415	441	459	478	498	519
MOTOR CYCLE	192	203	215	283	299	290	305	271	227	239	252	266	281	297	313	331	349	369	390	412	435	460	486	514	543	574	605	637	671	706
BUS	362	381	402	367	387	392	413	324	278	293	309	326	345	364	385	405	435	466	499	534	571	611	654	700	749	801	839	879	922	966
TRUCK	176	184	192	201	209	136	141	120	81	83	86	88	91	93	96	98	101	103	106	108	111	113	116	118	121	123	123	123	123	123
TRI CYCLE	81	85	89	131	137	128	135	127	118	124	130	137	144	152	160	168	177	187	197	207	218	230	242	256	270	284	294	304	314	326
PEDESTRIAN & BICYCLE	5	6	6	13	14	14	16	16	17	18	20	22	24	26	28	30	33	35	38	42	45	49	52	57	61	66	70	74	78	82
FUEL SAVING BENEFIT	219	228	264	379	445	466	482	459	454	468	482	497	511	525	540	554	565	577	588	600	611	622	634	645	656	668	668	668	668	668
VEHICLE AT CROSSING	219	228	264	293	355	335	347	244	194	201	207	213	220	226	232	238	243	248	253	258	263	267	272	277	282	287	287	287	287	287
VEHICLES AT FLYOVER				86	89	131	135	215	259	267	275	283	291	300	308	316	322	329	335	342	348	355	361	368	374	381	381	381	381	381
ACCIDENT AVOIDANCE BENE							249	266	287	317	346	357	360	330	356	372	376	379	384	388	393	399	405	411	418	426	431	436	442	448
DIRECT BENE							242	257	276	303	329	336	336	305	325	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
VEHICLE							5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
LIFE							162	173	185	203	221	226	226	205	218	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226
CROSSING FACILITY							75	80	85	94	102	104	104	94	101	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
INDIRECT BENE							7	8	11	14	17	21	23	25	31	36	39	43	48	52	57	63	69	75	82	90	95	100	105	111
LAND USE BENEFIT							4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
USAGE OF SPACE							4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
FOR STATION FACILITY							282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282
FOR COMMERCIAL USE							4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584
FOR OTHER USE							68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
NET FLOW	-8560	-7181	-3435	918	-1814	-3332	14088	10831	9614	10172	10773	11403	12077	12773	13584	14433	15255	16123	17255	18064	19146	20311	21563	22910	24342	25914	25909	28112	29304	34332
EIRR	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784	23.784
EMPLOYMENT GENE MIL RP	656	3308	2761	15	2103	2177	-39	-37	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35
ENERGY SAV EFFECT MIL RP	219	228	264	379	189	114	468	442	435	447	459	472	484	495	507	519	529	539	548	558	568	578	587	597	607	616	616	616	616	616

Appendix Table - B Economic Analysis of Track Elevation for CENTRAL LINE (Single Track Operation Proposal)
(Rp. million)

Case 2

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
INVESTMENT DIFF	23040	12562	2249	13513	117	-5507	-4447	-1337						27			-108						27		1603				-108	-4967
WITH	26641	19121	17714	23082	5409									112			114						112		3064				114	-8770
ELECTRIFICATION	3480	1521	1846	1669	1061																				1751					
SIGNALS & TELECOM	1180		306	671	333									112			114						112		1313				114	
CIVIL WORK	11634	13318	15562	20722	4015																									
LAND ACQU & COMP	10346	4282																												
OTHERS																														-8770
-SALVAGE VALUE																														
WITHOUT	3601	6559	15465	9569	5292	5507	4447	1337						85			222						85		1461				222	-3803
RAILWAY	1246	5101	11506	8232										85			222						85		1461				222	-3803
ELECTRIFICATION	508		1210	975																					743					
TELECOMUNICATION	40		55											85									85							
SIGNALS	699		272	276													222								718				222	
STATION FACILITY		2115	6850	6981																										
LAND ACQU & COMP		2986	3109																											
-SALVAGE VALUE																														-3803
ROAD FLYOVER	2355	1458	3959	1337	5292	5507	4447	1337																						
MAINT/OPE COST DIF	-104	-104	-104	-104	263	267	269	266	266	268	270	272	274	277	280	282	284	285	287	288	290	292	293	295	297	298	298	298	298	298
FACILITY MAINT COST DIF	-104	-104	-104	-104	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212
ELECTLIC FACL	-44	-44	-44	-44	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
SIGNALS & TELECOM	-24	-24	-24	-24	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
CIVIL	-36	-36	-36	-36	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
OPERATION COST DIF					51	55	57	54	53	56	58	60	62	65	67	70	71	73	74	76	78	79	81	83	84	86	86	86	86	86
PSNL COST DIF					45	42	42	37	35	35	35	33	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
ELEC COST DIF					6	12	15	17	19	21	23	25	27	30	33	35	37	38	40	41	43	45	46	48	50	51	51	51	51	51
TOTAL BENEFIT	-1	-1	-4	84	5914	9347	9858	9704	9824	10384	10987	11619	12295	12993	13008	14675	15483	16352	17288	18296	19380	20546	21800	23149	24599	26157	27226	28354	29547	30805
TIME SAVING BENEFIT	-1	-1	-4	-3	2156	3731	4193	4045	4149	4665	5224	5852	6491	7205	7978	8815	9608	10462	11382	12374	13441	14591	15828	17159	18590	20129	21193	22317	23503	24756
BENE OF RAILWAY PASS	-1	-1	-4	-3	365	1073	1350	1653	1987	2352	2753	3190	3668	4190	4759	5378	5960	6590	7272	8009	8807	9669	10599	11604	12687	13856	14632	15452	16317	17231
BENE OF ROAD VEHICLE					1791	2657	2843	2392	2163	2312	2472	2642	2822	3014	3219	3437	3648	3872	4110	4364	4635	4922	5229	5555	5903	6273	6561	6865	7186	7525
SEDAN					955	1487	1611	1354	1283	1385	1494	1610	1735	1868	2010	2161	2295	2439	2592	2754	2928	3113	3310	3520	3744	3983	4172	4371	4581	4803
TAXI					138	210	223	180	160	170	180	191	203	215	228	242	257	273	289	307	326	347	368	391	415	441	459	478	498	519
MOTOR CYCLE					200	290	305	271	227	239	252	266	281	297	313	331	349	369	390	412	435	460	486	514	543	574	605	637	671	706
BUS					258	392	413	324	278	293	309	326	345	364	385	406	435	466	499	534	571	611	654	700	749	801	839	879	922	966
TRUCK					139	136	141	120	81	83	86	88	91	93	96	98	101	103	106	108	111	113	116	118	121	123	123	123	123	123
TRI CYCLE					91	128	135	127	118	124	130	137	144	152	160	168	177	187	197	207	218	230	242	256	270	284	294	304	314	326
PEDESTRIAN & BICYCLE					9	14	16	16	17	18	20	22	24	26	28	30	33	35	38	42	45	49	52	57	61	66	70	74	78	82
FUEL SAVING BENEFIT				86	296	466	482	459	454	468	482	497	511	525	540	554	565	577	588	600	611	622	634	645	656	668	668	668	668	668
VEHICLE AT CROSSING					237	335	347	244	194	201	207	213	220	226	232	238	243	248	253	258	263	267	272	277	282	287	287	287	287	287
VEHICLES AT FLYOVER				86	60	131	135	215	259	267	275	283	291	300	308	316	322	329	335	342	348	355	361	368	374	381	381	381	381	381
ACCIDENT AVOIDANCE BENE					172	216	249	266	287	317	346	357	360	330	356	372	376	379	384	388	393	399	405	411	418	426	431	436	442	448
DIRECT BENE					170	211	242	257	276	303	329	336	336	305	325	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
VEHICLE					3	4	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
LIFE					114	142	162	173	185	203	221	226	226	205	218	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226
CROSSING FACILITY					52	65	75	80	85	94	102	104	104	94	101	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
INDIRECT BENE					3	5	7	8	11	14	17	21	23	25	31	36	39	43	48	52	57	63	69	75	82	90	95	100	105	111
LAND USE BENEFIT					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
USAGE OF SPACE					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
FOR STATION FACILITY					189	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282
FOR COMMERCIAL USE					3056	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584
FOR OTHER USE					45	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
NET FLOW	-22937	-12459	-2149	-13326	5534	14587	14036	10775	9558	10116	10717	11347	12021	12690	13528	14393	15307	16067	17002	18007	19090	20255	21480	22854	22700	25858	26927	28056	29356	35474
EIRR	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199	17.199
EMPLOYMENT GENE MIL RP	1679	3984	2570	3604	1282	-42	-42	-37	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35
ENERGY SAV EFFECT MIL RP				86	290	453	468	442	435	447	459	472	484	495	507	519	529	539	548	558	568	578	587	597	607	616	616	616	616	616

Appendix Table - C Economic Analysis of Track Elevation for CENTRAL LINE (Double Track Operation Proposal)
(Rp. million)

Case 3

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
INVESTMENT DIFF	28971	14439	2138	13237	-493	-5507	-4447	-1337						20			-120						20		1346				-120	-4207
WITH	32573	20998	17603	22806	4799									105			102						105		2808				102	-8010
ELECTRIFICATION	2900	1304	1636	1578	976																				1751					
SIGNALS & TELECOM	821		404	505	354									105			102						105		1057				102	
CIVIL WORK	14160	13528	15552	20722	3469																									
LAND ACQU & COMP	14691	6166																												
OTHERS																														
-SALVAGE VALUE																														-8010
WITHOUT	3601	6559	15465	9569	5292	5507	4447	1337						85			222						85		1461				222	-3803
RAILWAY	1246	5101	11506	8232										85			222						85		1461				222	-3803
ELECTRIFICATION	508		1210	975																					743					
TELECOMUNICATION	40		55											85									85							
SIGNALS	699		272	276													222								718				222	
STATION FACILITY		2115	6860	6981																										
LAND ACQU & COMP		2986	3109																											
-SALVAGE VALUE																														-3803
ROAD FLYOVER	2355	1458	3959	1337	5292	5507	4447	1337																						
MAINT/OPE COST DIF					238	242	244	241	241	243	245	247	249	253	255	257	259	260	262	263	265	267	268	270	272	273	273	273	273	273
FACILITY MAINT COST DIF					187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187
ELECTLIC FACL					81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
SIGNALS & TELECOM					15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CIVIL					92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
OPERATION COST DIF					51	55	57	54	53	56	58	60	62	65	67	70	71	73	74	76	78	79	81	83	84	86	86	86	86	86
PENL COST DIF					45	42	42	37	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
ELEC COST DIF					6	12	15	17	19	21	23	25	27	30	33	35	37	38	40	41	43	45	46	48	50	51	51	51	51	51
TOTAL BENEFIT				86	5914	9347	9858	9704	9824	10384	10987	11619	12295	12995	13308	14675	15483	16352	17208	18296	19380	20546	21800	23149	24599	26157	27226	28354	29547	30805
TIME SAVING BENEFIT					2156	3731	4193	4045	4149	4665	5224	5852	6491	7203	7978	8815	9608	10462	11382	12374	13441	14591	15828	17159	18590	20129	21193	22317	23503	24756
GENE OF RAILWAY PASS					365	1073	1350	1653	1937	2352	2753	3190	3668	4190	4759	5373	5980	6590	7272	8009	8807	9669	10599	11604	12687	13856	14632	15452	16317	17231
GENE OF ROAD VEHICLE					1791	2657	2843	2392	2163	2312	2472	2642	2822	3014	3219	3437	3643	3872	4110	4364	4635	4922	5229	5555	5903	6273	6561	6865	7186	7525
SEDAN					955	1487	1611	1354	1283	1365	1494	1610	1735	1860	2010	2161	2296	2439	2592	2754	2928	3113	3310	3520	3744	3983	4172	4371	4581	4803
TAXI					138	210	223	180	160	170	180	191	203	215	228	242	257	273	289	307	326	347	368	391	415	441	459	478	498	519
MOTOR CYCLE					200	290	305	271	227	239	252	266	281	297	313	331	349	369	390	412	435	460	486	514	543	574	605	637	671	706
BUS					258	392	413	324	273	293	309	326	345	364	385	405	435	466	499	534	571	611	654	700	749	801	839	879	922	966
TRUCK					139	136	141	120	81	83	86	89	91	93	96	98	101	103	106	108	111	113	116	118	121	123	123	123	123	123
TRI CYCLE					91	128	135	127	118	124	130	137	144	152	160	168	177	187	197	207	218	230	242	256	270	284	294	304	314	326
PEDESTRIAN & BICYCLE					9	14	16	16	17	18	20	22	24	26	28	30	33	35	38	42	45	49	52	57	61	66	70	74	78	82
FUEL SAVING BENEFIT				86	296	466	482	459	454	468	482	497	511	525	540	554	565	577	588	600	611	622	634	645	656	668	668	668	668	668
VEHICLE AT CROSSING					237	335	347	244	194	201	207	213	220	226	232	238	243	248	253	258	263	267	272	277	282	287	287	287	287	287
VEHICLES AT FLYOVER				86	60	131	135	215	259	267	275	283	291	300	308	316	322	329	335	342	348	355	361	368	374	381	381	381	381	381
ACCIDENT AVOIDANCE BENE					172	216	249	266	287	317	346	357	360	330	356	372	376	379	384	383	393	399	405	411	418	426	431	436	442	448
DIRECT BENE					170	211	242	257	276	303	329	336	336	305	325	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
VEHICLE					3	4	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
LIFE					114	142	162	173	185	203	221	226	226	205	218	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226
CROSSING FACILITY					52	65	75	80	85	94	102	104	104	94	101	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
INDIRECT BENE					3	5	7	8	11	14	17	21	23	25	31	36	39	43	48	52	57	63	69	75	82	90	95	100	105	111
LAND USE BENEFIT					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
USAGE OF SPACE					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
FOR STATION FACILITY					188	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282
FOR COMMERCIAL USE					3056	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584
FOR OTHER USE					45	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
NET FLOW	-28971	-14439	-2138	-13150	6169	14612	14061	10799	9583	10141	10742	11372	12046	12722	13553	14418	15344	16092	17026	18032	19115	20279	21512	22879	22981	25803	26952	28081	29393	34739
EIRR	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477	15.477
EMPLOYMENT GENE MIL RP	1998	3018	2687	3765	1289	-42	-42	-37	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35
ENERGY SAV EFFECT MIL RP				86	290	453	468	442	435	447	459	472	484	495	507	519	529	539	548	558	568	578	587	597	607	616	616	616	616	616

Appendix Table - C1 Economic Analysis of Track Elevation for CENTRAL LINE (Sensitivity Analysis based on The Double Track Operation Proposal)
(Rp. million)

Case 4

COST OVERRUN = 10% : TRAFFIC DEMAND = 90% :

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
INVESTMENT DIFF	30635	15710	3058	14694	-13	-5507	-4447	-1337						22			-118						22		1515				-118	-4663
WITH	34361	22481	19363	25086	5279									116			112						116		3089				112	-8811
ELECTRIFICATION	3190	1435	1800	1736	1074																				1926					
SIGNALS & TELECOM	903		444	556	390									116			112						116		1163				112	
CIVIL WORK	15576	14880	17119	22795	3816																									
LAND ACQU & COMP	14691	6166																												
OTHERS																														
-SALVAGE VALUE																														
WITHOUT	3726	6771	16304	10392	5292	5507	4447	1337						94			230						94		1573				230	-8811
RAILWAY	1371	5313	12345	9055																										-4140
ELECTRIFICATION	559		1331	1072										94			230						94		1573				230	-4148
TELECOMMUNICATION	43		60																						794					
SIGNALS	769		299	304										94									94							
STATION FACILITY		2327	7546	7679													230								779				230	
LAND ACQU & COMP		2986	3109																											
-SALVAGE VALUE																														
ROAD FLYOVER	2355	1458	3959	1337	5292	5507	4447	1337																						-4148
MAINT/OPE COST DIF					258	262	264	261	261	263	265	267	269	272	275	277	278	280	282	283	285	286	288	290	291	293	293	293	293	293
FACILITY MAINT COST DIF					207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207
ELECTLIC FACL					89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
SIGNALS & TELECOM					17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
CIVIL	"				101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
OPERATION COST DIF					51	55	57	54	53	56	58	60	62	65	67	70	71	73	74	76	78	79	81	83	84	86	86	86	86	86
PSNL COST DIF					45	42	42	37	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
ELEC COST DIF					6	12	15	17	19	21	23	25	27	30	33	35	37	38	40	41	43	45	46	48	50	51	51	51	51	51
TOTAL BENEFIT				78	5701	9029	9519	9412	9554	10097	10682	11306	11962	12632	13423	14275	15062	15907	16818	17799	18855	19992	21214	22529	23943	25463	26503	27601	28761	29996
TIME SAVING BENEFIT					1977	3465	3909	3806	3933	4433	4977	5568	6208	6903	7656	8472	9243	10075	10971	11937	12976	14099	15305	16603	18000	19502	20537	21630	22784	24003
BENE OF RAILWAY PASS					345	1073	1350	1633	1907	2352	2753	3190	3668	4190	4759	5378	5960	6590	7272	8009	8807	9669	10599	11604	12687	13856	14632	15452	16317	17231
BENE OF ROAD VEHICLE					1612	2391	2559	2153	1946	2081	2225	2377	2540	2713	2897	3094	3283	3485	3699	3928	4171	4430	4706	5000	5312	5646	5905	6179	6468	6773
SEDAN					860	1333	1450	1218	1154	1246	1344	1449	1561	1681	1809	1945	2066	2195	2333	2479	2635	2802	2979	3168	3370	3585	3754	3934	4123	4322
TAXI					124	189	201	162	144	153	162	172	182	193	205	218	231	245	260	277	294	312	331	352	374	397	413	430	440	468
MOTOR CYCLE					180	261	275	244	204	215	227	240	253	267	282	298	315	332	351	371	392	414	437	462	489	517	544	573	603	636
BUS					232	353	372	292	250	264	278	294	310	328	346	366	392	419	449	480	514	550	589	630	674	721	755	791	829	870
TRUCK					125	122	126	108	72	75	77	79	82	84	86	89	91	93	95	97	100	102	104	106	108	111	111	111	111	111
TRI CYCLE					62	115	121	115	106	111	117	123	130	137	144	151	159	168	177	186	196	207	218	230	243	256	264	273	283	293
PEDESTRIAN & BICYCLE					8	13	14	15	15	17	18	20	21	23	25	27	29	32	35	37	40	44	47	51	55	59	63	66	70	74
FUEL SAVING BENEFIT				78	267	419	434	413	408	421	434	447	460	473	486	499	509	519	529	540	550	560	570	581	591	601	601	601	601	601
VEHICLE AT CROSSING					213	301	312	220	175	181	186	192	198	203	209	215	219	223	228	232	236	241	245	249	254	258	258	258	258	258
VEHICLES AT FLYOVER				78	54	118	122	193	233	241	248	255	262	270	277	284	290	296	302	308	313	319	325	331	337	343	343	343	343	343
ACCIDENT AVOIDANCE BENE					168	210	242	259	279	308	337	357	360	322	347	371	376	379	384	388	393	399	405	411	418	426	431	436	442	448
DIRECT BENE					165	206	236	250	269	295	320	336	336	297	317	335	336	336	336	336	336	336	336	336	336	336	336	336	336	336
VEHICLE					3	4	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
LIFE					111	138	158	168	180	193	215	226	226	199	213	225	226	226	226	226	226	226	226	226	226	226	226	226	226	226
CROSSING FACILITY					51	64	73	77	83	91	99	104	104	92	98	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
INDIRECT BENE					3	5	6	8	10	13	17	21	23	25	30	35	39	43	48	52	57	63	69	75	82	90	95	100	105	111
LAND USE BENEFIT					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
USAGE OF SPACE					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
FOR STATION FACILITY					168	282	282	282	282	282	282	282	282	232	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282
FOR COMMERCIAL USE					3056	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584
FOR OTHER USE					45	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
NET FLOW	-30635	-15710	-3058	-14616	5456	14274	13702	10488	9294	9834	10418	11039	11693	12338	13148	13998	14901	15827	16537	17516	18571	19705	20904	22239	22136	25169	26210	27308	28586	34356
EIRR	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243	14.243
EMPLOYMENT GENE MIL RP	1998	3818	2687	3765	1289	-42	-42	-37	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35
ENERGY SAV EFFECT MIL RP				78	261	407	419	396	390	400	411	422	433	442	453	464	472	481	490	498	507	516	524	533	541	550	550	550	550	550

Appendix Table - C2 Economic Analysis of Track Elevation for CENTRAL LINE (Sensitivity Analysis based on The Double Track Operation Proposal)
(Rp. million)

Case 5
COST OVERRUN = 20% : TRAFFIC DEMAND = 90% :

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
INVESTMENT DIFF	32298	16982	3979	16151	467	-5507	-4447	-1337						24			-116						24		1684				-116	-5119
WITH	36149	23964	21123	27367	5759									126			122						126		3369				122	-9612
ELECTRIFICATION	3480	1565	1954	1894	1171																				2101					
SIGNALS & TELECOM	986		484	606	425									126			122						126		1269				122	
CIVIL WORK	16993	16233	18675	24867	4163																									
LAND ACQU & COMP	14691	6166																												
OTHERS																														
-SALVAGE VALUE																														
WITHOUT	3651	6982	17144	11215	5292	5507	4447	1337						102			239						102		1685				239	-9612
RAILWAY	1496	5524	13185	9878																										-4493
ELECTRIFICATION	610		1452	1170										102			239						102		1685				239	-4493
TELECOMUNICATION	47		66																						845					
SIGNALS	838		327	331										102									102							
STATION FACILITY		2538	8232	8377													239								841				239	
LAND ACQU & COMP		2986	3109																											
-SALVAGE VALUE																														
ROAD FLYOVER	2355	1458	3959	1337	5292	5507	4447	1337																						-4493
MAINT/OPE COST DIF					278	281	284	281	280	282	284	287	289	292	294	296	298	300	301	303	304	306	308	309	311	313	313	313	313	313
FACILITY MAINT COST DIF					227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227
ELECTLIC FACL					97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
SIGNALS & TELECOM					19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
CIVIL					110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
OPERATION COST DIF					51	55	57	54	53	56	58	60	62	65	67	70	71	73	74	76	78	79	81	83	84	86	86	86	86	86
PSNL COST DIF					45	42	42	37	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
ELEC COST DIF					6	12	15	17	19	21	23	25	27	30	33	35	37	38	40	41	43	45	46	48	50	51	51	51	51	51
TOTAL BENEFIT				78	5701	9029	9519	9412	9554	10097	10682	11306	11962	12632	13423	14275	15062	15907	16818	17799	18855	19992	21214	22529	23943	25463	26503	27601	28761	29906
TIME SAVING BENEFIT					1977	3465	3909	3896	3933	4433	4977	5558	6208	6903	7656	8472	9243	10075	10971	11937	12978	14099	15305	16603	18000	19502	20537	21630	22784	24003
BENE OF RAILWAY PASS					365	1073	1350	1653	1987	2352	2753	3190	3668	4190	4759	5378	5960	6590	7272	8009	8807	9669	10599	11604	12687	13856	14632	15452	16317	17231
BENE OF ROAD VEHICLE					1612	2391	2559	2153	1946	2081	2225	2377	2540	2713	2897	3094	3283	3485	3699	3928	4171	4430	4706	5000	5312	5644	5905	6179	6468	6773
SEDAN					860	1338	1450	1218	1154	1246	1344	1449	1561	1681	1809	1945	2066	2195	2333	2479	2635	2802	2979	3168	3370	3585	3754	3934	4123	4322
TAXI					124	189	201	162	144	153	162	172	182	193	205	218	231	245	260	277	294	312	331	352	374	397	413	430	443	468
MOTOR CYCLE					100	261	275	244	204	215	227	240	253	267	282	298	315	332	351	371	392	414	437	462	489	517	544	573	603	636
BUS					232	353	372	292	250	264	278	294	310	328	346	366	392	419	449	480	514	550	589	630	674	721	755	791	829	870
TRUCK					125	122	126	108	72	75	77	79	82	84	86	89	91	93	95	97	100	102	104	106	108	111	111	111	111	111
TRI CYCLE					82	115	121	115	106	111	117	123	130	137	144	151	159	168	177	186	196	207	218	230	243	256	264	273	283	293
PEDESTRIAN & BICYCLE					8	13	14	15	15	17	18	20	21	23	25	27	29	32	35	37	40	44	47	51	55	59	63	66	70	74
FUEL SAVING BENEFIT				78	267	419	434	413	408	421	434	447	460	473	486	499	509	519	529	540	550	560	570	581	591	601	601	601	601	601
VEHICLE AT CROSSING					213	301	312	220	175	181	186	192	198	203	209	215	219	223	228	232	236	241	245	249	254	258	259	258	258	258
VEHICLES AT FLYOVER				78	54	118	122	193	233	241	248	255	262	270	277	284	290	296	302	308	313	319	325	331	337	343	343	343	343	343
ACCIDENT AVOIDANCE BENE					168	210	242	259	279	308	337	357	360	322	347	371	376	379	384	388	393	399	405	411	418	426	431	436	442	448
DIRECT BENE					165	206	236	250	269	295	320	336	336	297	317	335	336	336	336	336	336	336	336	336	336	336	336	336	336	336
VEHICLE					3	4	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
LIFE					111	138	158	168	180	198	215	226	226	199	213	225	226	226	226	226	226	226	226	226	226	226	226	226	226	226
CROSSING FACILITY					51	64	73	77	83	91	99	104	104	92	98	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
INDIRECT BENE					3	5	6	8	10	13	17	21	23	25	30	35	39	43	48	52	57	63	69	75	82	90	95	100	105	111
LAND USE BENEFIT					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
USAGE OF SPACE					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
FOR STATION FACILITY					168	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282
FOR COMMERCIAL USE					3056	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584
FOR OTHER USE					45	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
NET FLOW	-32298	-16982	-3979	-16073	4957	14254	13682	10468	9274	9815	10398	11019	11673	12316	13128	13979	14880	15608	16517	17497	18551	19666	20882	22220	21948	25150	26190	27288	28564	34792
EIRR	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407	13.407
EMPLOYMENT GENE MIL RP	1998	3818	2687	3765	1289	-42	-42	-37	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35	-35
ENERGY SAV EFFECT MIL RP				78	261	407	419	396	390	400	411	422	433	442	453	464	472	481	490	498	507	516	524	533	541	550	550	550	550	550

Appendix Table - C3 Economic Analysis of Track Elevation for CENTRAL LINE (Sensitivity Analysis based on The Double Track Operation Proposal)
(Rp. million)

Case 6 NUMBER OF FLYOVER 5-->4 : COST OVERRUN = 10% : TRAFFIC DEMAND = 80% :

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
INVESTMENT DIFF	30635	15710	3058	14694	-13	-3113	-3110							22			-118						22		1515				-118	-4663
WITH	34361	22481	19363	25086	5279									116			112						116		3089				112	-8811
ELECTRIFICATION	3190	1435	1800	1736	1074																				1926					
SIGNALS & TELECOM	903		444	556	390									116			112						116		1163				112	
CIVIL WORK	15576	14880	17119	22795	3816																									
LAND ACQU & COMP	14691	6166																												
OTHERS																														
-SALVAGE VALUE																														
WITHOUT	3726	6771	16304	10392	5292	3113	3110							94			230						94		1573				230	-8811 -4148
RAILWAY	1371	5313	12345	9055										94			230						94		1573				230	-4148
ELECTRIFICATION	559		1331	1072																					794					
TELECOMUNICATION	43		60											94									94							
SIGNALS	769		299	304													230								779				230	
STATION FACILITY		2327	7546	7679																										
LAND ACQU & COMP		2986	3109																											
-SALVAGE VALUE																														
ROAD FLYOVER	2355	1458	3959	1337	5292	3113	3110																							-4148
MAINT/OPE COST DIF					258	262	264	261	263	265	267	269	272	275	277	279	281	283	284	286	287	289	291	292	294	296	296	296	296	296
FACILITY MAINT COST DIF					207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207
ELECTLIC FACL					89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
SIGNALS & TELECOM					17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
CIVIL					101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
OPERATION COST DIF					51	55	57	54	56	58	60	62	64	68	70	72	74	75	77	79	80	82	83	85	87	89	89	89	69	89
PSNL COST DIF					45	42	42	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
ELEC COST DIF					6	12	15	17	19	21	23	25	27	30	33	35	37	38	40	41	43	45	46	48	50	51	51	51	51	51
TOTAL BENEFIT				69	5487	8609	9157	9096	9602	10148	10737	11363	12024	12700	13495	14353	15145	15997	16915	17904	18968	20112	21344	22669	24093	25623	26673	27781	28951	30187
TIME SAVING BENEFIT					1798	3199	3624	3567	4032	4538	5087	5603	6329	7031	7790	8613	9391	10231	11136	12111	13161	14291	15508	16817	18226	19739	20784	21887	23051	24281
BENE OF RAILWAY PASS					355	1073	1350	1653	1987	2352	2753	3190	3668	4190	4759	5378	5960	6590	7272	8009	8837	9669	10599	11604	12687	13856	14632	15452	16317	17231
BENE OF ROAD VEHICLE					1433	2126	2275	1914	2045	2185	2334	2493	2661	2840	3031	3235	3432	3641	3864	4101	4354	4623	4909	5214	5538	5833	6152	6435	6735	7051
SEDAN					764	1190	1289	1083	1170	1264	1363	1469	1583	1704	1834	1972	2095	2226	2365	2513	2672	2840	3020	3212	3417	3635	3807	3983	4160	4382
TAXI					111	168	179	144	153	162	172	183	194	206	218	231	246	261	277	294	312	331	352	374	397	422	439	457	477	497
MOTOR CYCLE					160	232	244	216	228	241	254	268	283	298	315	333	351	371	392	414	437	462	489	517	546	577	608	640	674	710
BUS					207	314	330	280	274	288	304	321	339	357	378	399	427	457	489	523	560	599	641	685	733	784	821	860	901	945
TRUCK					112	109	112	96	99	102	105	108	112	115	118	121	124	127	130	133	136	139	142	145	148	151	151	151	151	151
TRI CYCLE					73	102	108	102	107	113	119	125	132	139	146	153	162	170	179	189	199	210	221	233	246	259	268	277	287	297
PEDESTRIAN & BICYCLE					7	12	13	13	14	15	17	18	20	21	23	25	27	30	32	35	38	41	44	47	51	55	58	61	65	69
FUEL SAVING BENEFIT				69	237	352	364	345	356	367	378	390	401	412	423	435	444	453	462	470	479	488	497	506	515	524	524	524	524	524
VEHICLE AT CROSSING					190	247	256	173	179	184	190	196	201	207	213	218	223	227	232	236	241	245	250	254	259	263	263	263	263	263
VEHICLES AT FLYOVER				69	48	105	108	172	177	183	188	194	200	205	211	216	221	225	230	234	239	243	248	252	257	261	261	261	261	261
ACCIDENT AVOIDANCE BENE					163	204	235	251	280	310	338	357	360	323	348	372	376	379	384	388	393	399	405	411	418	426	431	436	442	448
DIRECT BENE					160	200	229	243	270	296	321	336	336	298	318	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
VEHICLE					3	4	4	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
LIFE					108	134	153	163	161	199	216	226	226	200	213	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226
CROSSING FACILITY					50	62	71	75	83	92	99	104	104	92	98	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
INDIRECT BENE					3	4	6	8	10	14	17	21	23	25	30	36	39	43	48	52	57	63	69	75	82	90	95	100	105	111
LAND USE BENEFIT					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
USAGE OF SPACE					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
FOR STATION FACILITY					188	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282
FOR COMMERCIAL USE					3056	4584	4584	4584	4584	4504	4584	4584	4584	4584	4504	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584
FOR OTHER USE					45	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
NET FLOW	-30635	-15710	-3058	-14625	5243	11540	12004	8836	9339	9883	10470	11094	11753	12403	13218	14074	14982	15715	16631	17618	18680	19824	21032	22376	22284	25328	26377	27485	28774	34555
EIRR	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748	13.748
EMPLOYMENT GENE MIL RP.	1998	3818	2687	3765	1289	-42	-42	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37
ENERGY SAV EFFECT MIL RP				69	231	339	350	328	337	346	355	364	374	382	391	400	407	414	422	429	437	444	451	458	466	473	473	473	473	473

Appendix Table - C4 Economic Analysis of Track Elevation for CENTRAL LINE (Sensitivity Analysis based on The Double Track Operation Proposal)
(Rp. million)

Case 7

NUMBER OF FLYOVER 5-->4 : COST OVERRUN = 20% : TRAFFIC DEMAND = 80% :

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
INVESTMENT DIFF	32298	16982	3979	16151	467	-3113	-3110							24			-116						24		1684				-116	-5119
WITH	36149	23964	21123	27367	5759									126			122						126		3369				122	-9612
ELECTRIFICATION	3480	1565	1964	1894	1171																				2101					
SIGNALS & TELECOM	986		484	606	425									126			122						126		1269				122	
CIVIL WORK	16993	16233	18675	24867	4163																									
LAND ACQU & COMP	14691	6166																												
OTHERS																														-9612
-SALVAGE VALUE																														
WITHOUT	3851	6982	17144	11215	5292	3113	3110							102			239						102		1685				239	-4493
RAILWAY	1496	5524	13185	9878										102			239						102		1685				239	-4493
ELECTRIFICATION	610		1452	1170																					845					
TELECOMUNICATION	47		66											102									102							
SIGNALS	838		327	331													239								841				239	
STATION FACILITY		2538	8232	8377																										
LAND ACQU & COMP		2986	3109																											
-SALVAGE VALUE																														-4493
ROAD FLYOVER	2355	1458	3959	1337	5292	3113	3110																							
MAINT/OPE COST DIF					278	281	284	281	283	285	287	289	291	294	297	299	301	302	304	305	307	309	310	312	314	315	315	315	315	315
FACILITY MAINT COST DIF					227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227	227
ELECTLIC FACL					97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
SIGNALS & TELECOM					19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
CIVIL					110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
OPERATION COST DIF					51	55	57	54	56	58	60	62	64	68	70	72	74	75	77	79	80	82	83	85	87	89	89	89	89	89
PENL COST DIF					45	42	42	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
ELEC COST DIF					6	12	15	17	19	21	23	25	27	30	33	35	37	38	40	41	43	45	46	48	50	51	51	51	51	51
TOTAL BENEFIT				69	5487	6689	9157	9096	9502	10148	10737	11363	12024	12700	13395	14353	15145	15997	16915	17904	18968	20112	21344	22669	24093	25623	26673	27781	28951	30187
TIME SAVING BENEFIT					1798	3199	3624	3567	4032	4538	5087	5683	6329	7031	7790	8613	9591	10231	11136	12111	13161	14291	15508	16817	18226	19739	20784	21667	23051	24281
BENE OF RAILWAY PASS					365	1073	1350	1653	1987	2352	2753	3190	3668	4190	4759	5378	5960	6590	7272	8009	8807	9669	10599	11604	12687	13856	14632	15452	16317	17231
BENE OF ROAD VEHICLE					1433	2126	2275	1914	2045	2185	2334	2493	2661	2840	3031	3235	3452	3641	3864	4101	4334	4623	4909	5214	5538	5883	6152	6435	6735	7051
SEDAN					764	1190	1269	1003	1170	1264	1363	1469	1583	1704	1834	1972	2095	2226	2365	2513	2672	2840	3020	3212	3417	3635	3807	3988	4180	4382
TAXI					111	168	179	144	153	162	172	183	194	206	218	231	246	261	277	294	312	331	352	374	397	422	439	457	477	497
MOTOR CYCLE					160	232	244	216	228	241	254	268	283	298	315	333	351	371	392	414	437	462	489	517	546	577	608	640	674	710
BUS					207	314	330	260	274	288	304	321	339	357	378	399	427	457	489	523	560	599	641	685	733	784	821	860	901	945
TRUCK					112	109	112	96	99	102	105	108	112	115	118	121	124	127	130	133	136	139	142	145	148	151	151	151	151	151
TRI CYCLE					73	102	108	102	107	113	119	125	132	139	146	153	162	170	179	189	199	210	221	233	246	259	268	277	287	297
PEDESTRIAN & BICYCLE					7	12	13	13	14	15	17	18	20	21	23	25	27	30	32	35	38	41	44	47	51	55	58	61	65	69
FUEL SAVING BENEFIT				69	237	352	364	345	356	367	378	390	401	412	423	435	444	453	462	470	479	488	497	506	515	524	524	524	524	524
VEHICLE AT CROSSING					190	247	256	173	179	184	190	195	201	207	213	218	223	227	232	236	241	245	250	254	259	263	263	263	263	263
VEHICLES AT FLYOVER				69	48	105	108	172	177	183	188	194	200	205	211	216	221	225	230	234	239	243	248	252	257	261	261	261	261	261
ACCIDENT AVOIDANCE BENE					163	204	235	251	280	310	338	357	360	323	348	372	376	379	384	388	393	399	405	411	418	426	431	436	442	448
DIRECT BENE					160	200	229	243	270	296	321	336	336	298	318	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
VEHICLE					3	4	4	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
LIFE					108	134	153	163	181	199	216	226	226	200	213	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226
CROSSING FACILITY					50	62	71	75	83	92	99	104	104	92	98	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
INDIRECT BENE					3	4	6	8	10	14	17	21	23	25	30	36	39	43	48	52	57	63	69	75	82	90	95	100	105	111
LAND USE BENEFIT					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
USAGE OF SPACE					3289	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934	4934
FOR STATION FACILITY					188	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	282	262	282	282	282	282	282	282	282
FOR COMMERCIAL USE					3056	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584	4584
FOR OTHER USE					45	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
NET FLOW	-32298	-16982	-3979	-16082	4743	11521	11984	8816	9319	9863	10450	11074	11733	12381	13199	14054	14960	15695	16611	17598	18661	19804	21010	22357	22095	25308	26357	27466	28752	34991
EIRR	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952	12.952
EMPLOYMENT GENE MIL RP	1998	3818	2687	3765	1289	-42	-42	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37	-37
ENERGY SAV EFFECT MIL RP				69	231	339	350	328	337	346	355	364	374	382	391	400	407	414	422	429	437	444	451	458	466	473	473	473	473	473