



# **Directorate General of Medical Education and Training, Uttar Pradesh**

**Investment Assessment Report for Azamgarh Medical College**

**Submitted by: CRISIL Risk & Infrastructure Solutions and  
Hosmac India Pvt. Limited**

February 2011

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## 1. ABBREVIATIONS

ACRONYM	DEFINITION
ALOS	Average length of stay
BPL	Below Poverty Line
BPM	Bid Process Management
COP	Cost of Project
CRIS	CRISIL Risk and Infrastructure Solutions Limited
DMET	Department of Medical Education & Training
FN	Foreign National
GOUP	Government of Uttar Pradesh
Hosmac	Hosmac India Pvt. Ltd. - A Healthcare Subject Matter Consultant
ICU	Intensive Care Unit
IPD	In-patient Department
IRR	Internal Rate of Return
NICU	Neo-natal Intensive Care Unit
OPD	Out-patient Department
PPP	Public Private Partnership
Project	Azamgarh Medical College and Associated Teaching Hospital
Projects	Medical colleges at Azamgarh and Banda and Paramedical College at Safai
RIMS	Rural Institute of Medical Sciences
RSBY	Rashtriya Swasthya Bima Yojana
UP	Uttar Pradesh
UPRNNL	Uttar Pradesh Rashtriya Nirman Nigam Limited

## **2. BACKGROUND**

The Government of Uttar Pradesh (GOUP) has undertaken the establishment of allopathic medical colleges at Azamgarh and Banda and Paramedical College at Safai (the Projects). The construction and other development activities for these Medical Colleges and Para Medical Colleges are in full swing. At Azamgarh and Safai construction of buildings is nearly complete. At Banda the construction activity is approximately complete to the extent of 50%.

The Government of Uttar Pradesh (GOUP) intends to run these medical colleges / Paramedical Colleges on Public Private Partnership (PPP) model. GOUP has envisioned the following role for the private sector in the project:

1. Take-over the facilities on as 'as-is where is' basis and complete the balance construction.
2. Obtain the necessary licenses/regulatory approvals required for starting and operating the College.

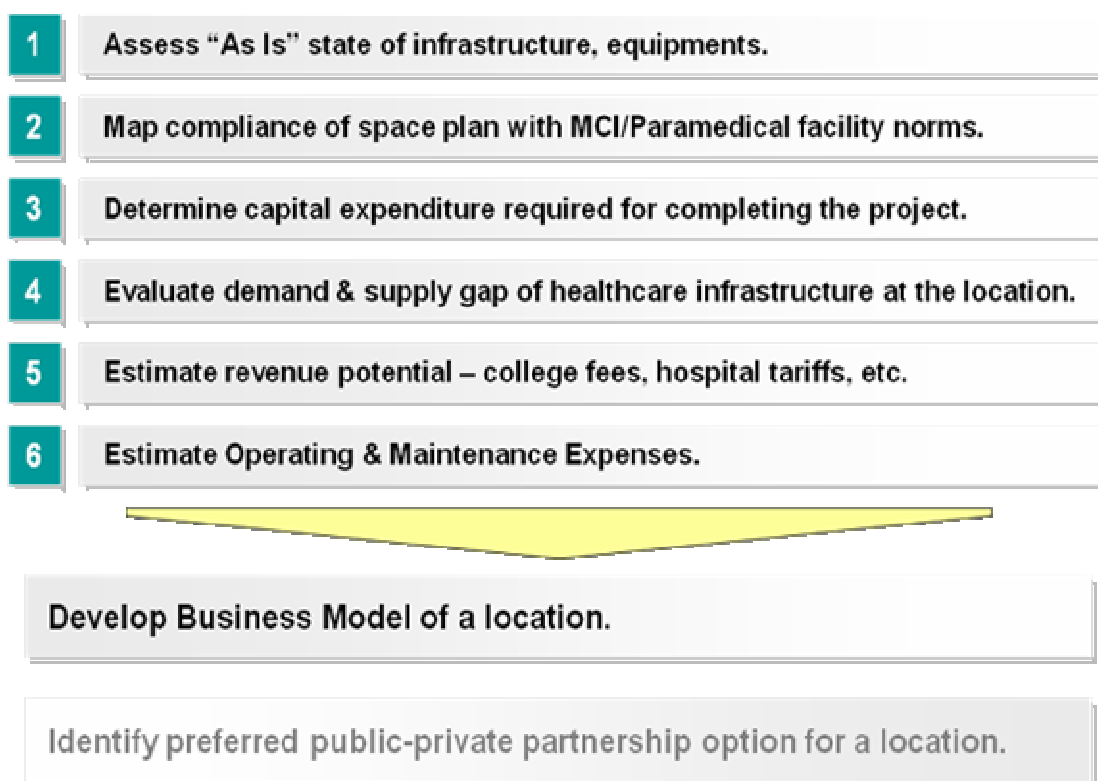
GOUP has appointed CRISIL Risk & Infrastructure Solutions (CRIS) as the Transaction Advisors for this project. CRIS has formed a consortium with Hosmac India Private Limited (Hosmac) a hospital management consultancy to execute the project. CRIS and Hosmac are required to assess the project for investors, prepare the contractual documents for inducting the Concessionaire and conduct the bid process management exercise for identifying the Concessionaire who will partner with GOUP for the development and operation of the Projects.

The following report estimates the investment required to complete the Azamgarh project, forecasts and analyses the project's financials.

### 3. METHODOLOGY

A snapshot of the approach that was adopted has been presented below and detailed subsequently.

#### Exhibit 1: Methodology for preparing PPP Framework



#### Facility and Market Assessment

CRIS and Hosmac had extensive interactions with GOUP/Department of Medical Education and Training (DMET), Uttar Pradesh to understand their objectives and requirements from this project. A team of consultants visited each site for “As Is” Assessment of the facility to assess the progress of the civil work and tentative time frame required for the completion of the project. Wherever available, site plans and periodic progress reports were collected from each site. Meeting and discussion with key stakeholders on site like chief medical superintendent and project site managers to collect the relevant data; understand project status and lacunae in the existing facility, if any.

Market assessment of the primary service area at each of the seven locations was undertaken to understand the socio-economic profile of the populace, assess the supply/demand situation for healthcare service delivery infrastructure in the region, with special emphasis on demand and needs of all the income groups including below poverty line (BPL) families. Meetings were also held government and private medical colleges operating in UP.

Review of medical education policy/ guidelines/ government orders of the state, MCI and GOI was undertaken to assess their implication on the project.

Through these site visits and meetings the following information was obtained:

- Market Size: The location and demographic profile study enabled in determining the market potential for the proposed facility.
- Spending Power: Economic insight of the region enabled in determining the paying capacity of the populace which will drive the demand for proposed healthcare facility.
- Current Supply of Healthcare Infrastructure: Review of existing healthcare infrastructure at each location enabled to estimating the supply of healthcare services at each location.
- Existing Medical Education Guidelines and Framework: This assisted in understanding the regulations/policies which will have an impact on of PPP framework of the project.
- Operations of existing medical & paramedical colleges and hospitals: This assisted in understanding the governance and business model of government and private medical colleges in UP. The existing fee for the medical courses, reservation pattern, operating model, user charges in the hospitals, broad level productivity, income and expenses of these facilities.
- Site Plans: The review of site plans enabled assessment of the compliance of the project with MCI guideline for the medical college infrastructure.
- Project Progress & Cost Report: The examination of the project progress & cost report enabled assessing project progress status, timeframe required to complete the project and funds released by the GOUP.
- Project Specific Obligations: This assisted in identifying any project specific obligations that could impact the proposed PPP model and framework.

Subsequently the data/document collected, findings of the field assessment were supplemented with secondary information available with CRIS and Hosmac. These market inputs and reviews had also helped in setting bid criteria for the private players and provide inputs/support for the financial assumptions.

### **Project Investment Assessment Study & Framework**

Based on the above, a financial model was prepared for assessing investment of the alternative scenarios. The model inputs were estimated in the following manner:

- Capital Costs for completion of the balance civil work and procurement of equipment at each site was assessed based on funds spent by GOUP and project status and addition fund required to complete civil work and procure remaining equipment required to start the facility.

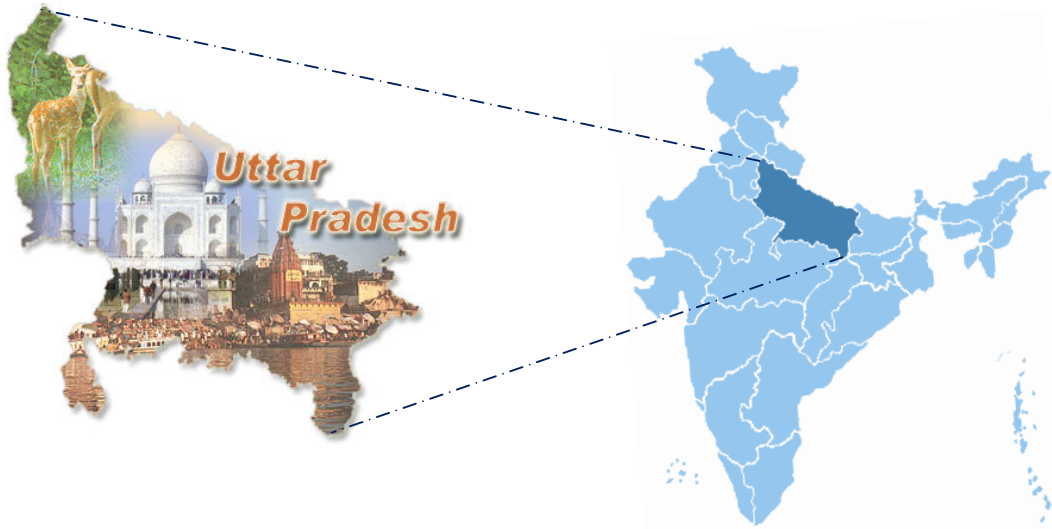
- Capital Structure of the project and cost of debt was estimated based on inputs on discussions with industry sources.
  
- Revenues were projected based on the courses to be offered, number of seats, seat sharing pattern between GOUP and private player, hospital bed sharing pattern, user charges and capacity utilization levels.
  
- Operating Costs were estimated considering the cost structure of existing Government and private medical colleges in the region and the industry in general.

Based on above, the financials of the project was assessed.

## 4. INTRODUCTION TO UTTAR PRADESH

Uttar Pradesh (UP) is located alongside Nepal in the North, Himachal Pradesh on the North West, Haryana on the west and Rajasthan on the south west, Madhya Pradesh on the south and south-west and Bihar on the east.

Exhibit 2: Map of Uttar Pradesh



Situated between 23° 52'N and 31° 28' N latitudes and 77° 3' and 84° 39'E longitudes, this is the fourth largest state in the country encompassing 2,94,411 square kilometers and comprising of 83 districts, 901 development blocks and 112,804 inhabited villages.

### 4.1. Demographic Profile

The total population of Uttar Pradesh in year 2008 was 19 crores and in year 2001 was 16.6 crore. The decadal population growth is ~2%. The population density per sq. km. in 2001 was 698. The BPL population in the state is 31.15% and Literacy rate of 57.37%. The sex ratio in Uttar Pradesh in 2001 was 898 females per 1000 males.

### 4.2. Economic Insight

UP has a large economy, it has a share of 10.7 % in aggregate domestic product of India. The State covers a large part of the highly fertile upper Gangetic plain consequently the major economic activity in the state is agriculture. Uttar Pradesh is home to largest number of Small Scale industrial units in the country.

### 4.3. Medical & Paramedical Human Resources of the State

There are 58,000 allopathic doctors registered in UP Medical Council of which around 40,000 doctors are working in UP. 56,000 nurses are registered with the UP State Medical Council of which around 43,000 nurses are presently working in the state. The UP State Medical Council estimates that there

is a gap of around 12,900 doctors and 1,19,800 nurses as of 2009. The following table provides an overview of the availability and gap in healthcare professionals in the state.

**Table 1: Healthcare Professionals: Availability, Need and Gap in UP**

S.NO.	HEALTHCARE – PROFESSIONAL	PRESENT SITUATION	DEMAND *	GAP
1	Allopathic doctors	40,000	52,857	(-) 12,857
2	Dentists	4,000	24,000	(-) 20,000
3	Nurses			
a	GNM	16,000	1,00,000	(-) 84,000
b	BHW(F)	27,000	60,000	(-) 33,000
c	DNEA	-	500	(-) 500
d	B. Sc. (N)	200	2,500	(-) 2,300
3	M. Sc. (N)	-	400	(-) 400
4	Paramedical			
a	Pharmacists	30,000	88,500	(-) 55,000
b	O.T. Technician	1,200	4,625	(-) 3,425
c	Optometrist and Orthopedician	2,000	7,400	(-) 5,400
d	Physiotherapist and Occupational Therapist	2,500	7,400	(-) 4,900
e	X-ray Technician	1,000	7,400	(-) 6,400
f	Laboratory Technician	3,500	7,400	(-) 3,900
g	CT scan Technician	30	200	(-) 170
h	MRI Technician	-	200	(-) 200
i	Audiometrist	-	740	(-) 740
j	Cytology technicians	-	370	(-) 370

\*as estimated by U.P. State Medical Faculty

Source: U.P. State Medical Faculty

#### 4.4. Medical Education Regulation in the State of UP

Department of Medical Education and Training (DMET), UP regulates the functioning of Medical and Paramedical colleges in UP. It conducts entrance examination and counseling for admission to various Undergraduate, Postgraduate and Super specialty courses. DMET also decides that the fees to be charged to students in both Government and Private Medical Colleges.

The Private Medical Colleges in UP are allowed to conduct their own admission procedures including tests for admitting students for the medical/paramedical courses. The course content for the private colleges is determined by the university to which they are affiliated.

#### 4.5. Medical Education Infrastructure in Uttar Pradesh

There is a need to double the existing medical education infrastructure in UP. Presently there are total 21 medical colleges of which 10 are Government Colleges and balance private. The Colleges have an intake capacity of 2062 students per year. The UP State Medical Council estimates that there is a gap of around 12,900 doctors as of 2009 highlighting the need for medical colleges to be set up in the

State. Further there is no degree level Paramedical College in UP state to bridge the current gap and future demand of paramedical staff in the state.

**Table 2: List of Medical & Paramedical Institutes & Capacity Details**

NO.	PROGRAMME	NUMBER OF INSTITUTES#		YEARLY CAPACITY		TOTAL CAPACITY
		GOVERNMENT	PRIVATE	GOVERNMENT	PRIVATE	
1	<b>M.B.B.S.</b>	10	11	1,062	1,000	2,062
2	<b>Dental</b>	3	27	130	2,650	2,780
3	<b>Nursing</b>					
a	M Sc.	-	4	-	85	85
b	B. Sc.	-	22	-	1,100	1,100
c	Post Basic B Sc.	1	4	25	140	165
d	GNM	-	100	-	4,315	4,828
e	BHW (F)	38	31	2,280	1,800	4,080
f	DNEA	-	1	-	20	20
g	Health Visitors	4	-	80	-	80
4	<b>Paramedical*</b>					
a	Pharmacy	4	1	240	60	300
b	O.T. technician	-	72	-	1,745	1,745
c	Optometry	-	89	-	2,735	2,735
d	Orthoptics	-	11	-	185	185
e	Physiotherapy	-	106	-	3,465	3,465
f	Occupational Therapy	-	4	-	130	130
g	X Ray Technician	7	5	310	150	460
h	Laboratory technician	7	5	150	530	680
i	CT scan technician	-	12	-	200	200
j	MRI technician	-	1	-	30	30

Source: DMET and HOSMAC

# Includes Recognized and Permanent Colleges

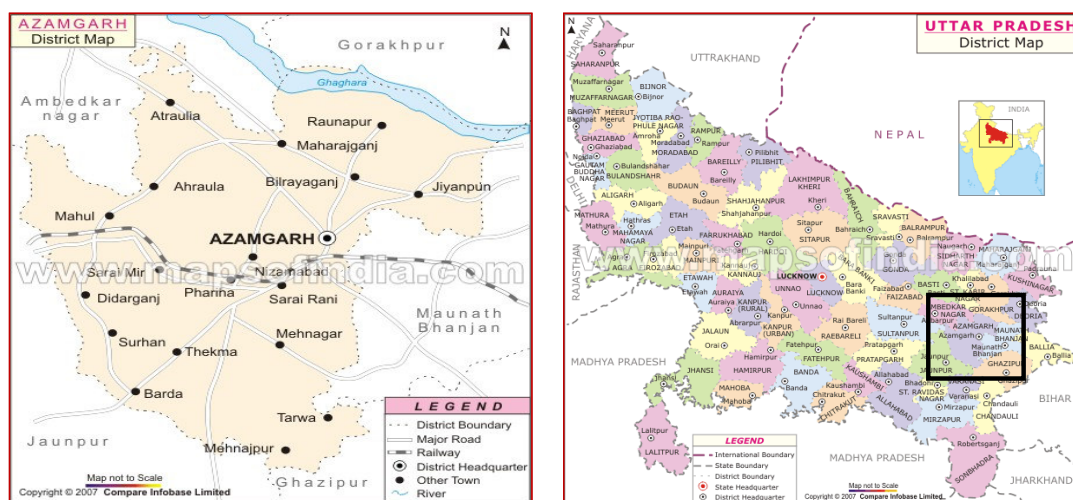
\* Diploma Course

## 5. OVERVIEW OF AZAMGARH

### 5.1. Location Profile

Chakrapanpur is a small city in the Azamgarh district of Uttar Pradesh. Azamgarh, one of the easternmost districts of the state, is situated on the banks of Tons river. It is located at 26.06° North and 83.19° East at an altitude of 77.65 metres above the sea level. The district occupies an area of 4234 sq. km. It is located alongside Gorakhpur on the north, Ghazipur and Jaunpur on the south, Sultanpur on the west and Mau in the east.

Exhibit 3: Map and Location of Azamgarh



### 5.2. Demographic Profile

The total population of the Azamgarh district as per the Census of India 2001 was 39.39 Lakh. Projected population for year 2011 is 47.90 Lakh & year 2016 is 52.20 Lakh. The demographics of the Azamgarh district are summarized in table below:

Table 3: Azamgarh Demographic Details

PARTICULARS	AZAMGARH DISTRICT
Population-Total	39.39 Lakh
Population-Rural	36.42 Lakh
Population-Urban	2.97 Lakh
Proportion of Urban Population	7.53%
Sex Ratio	1020
Literacy Rate (%)	56.95%
Decadal Population Growth rate	26.28%

Source: Census of India official website

### **5.3. Economic Profile**

The per capita income was Rs. 8,900 in 2008. Azamgarh's economy is dependent on agriculture. The major crops cultivated here are pulses, oil seeds, sugar cane, and potato. Pottery making, which was one of the oldest industries of Azamgarh, still contributes substantially to the economic life of the people. The industrial base of Azamgarh constitutes primarily of the food processing industry. Biscuits, toffee and other confectionery articles are produced at Azamgarh.

### **5.4. Healthcare Infrastructure Profile**

Azamgarh has two districts hospitals. It has 2.46 Allopathic hospitals/dispensaries per Lakh of population and 26.59 beds in allopathic hospitals/dispensaries per Lakh of population. Of the 3792 villages, 1.0 percent has a primary health centre while 1.4 percent has a primary health sub centre.

There is a significant shortage of healthcare facilities at Jalaun. The number of beds per 1000 population is 0.27 which is significantly lower than the World (3.3 beds) norm and India's average (1.5 beds) of beds per 1000 population (*Source: Market Survey and Hosmac Database*).

Although there are Colleges offering Homeopathic & Unani medical courses, there is no medical college in Azamgarh at present offering MBBS course; this college will help in providing for the much needed trained human resources in the healthcare domain. Moreover, it is estimated that there is a significant latent demand for quality healthcare facilities in the region which can be fulfilled by the upcoming Medical College and Teaching Hospital.

## 6. PROJECT OVERVIEW

### 6.1. Project Brief

GOUP has commenced the process of establishing a Medical College at Chakrapanpur, Azamgarh in the district of Azamgarh with an admission capacity of 100 seats for the MBBS course. Hospital's Structural & brick work has been completed, while finishing work like plastering in some areas, painting, electrical and plumbing fittings work is in progress. The OPD is operational from some time.

#### Exhibit 4: Pictures of Hospital and Admin Block, Satellite Map ICU and College and Residential Block



Hospital and Admin Block



Satellite Map of the Medical College



College Block



Residential Block

## 6.2. Facility Design

The college and teaching hospital is designed as per the MCI guidelines for the 100 admissions. The following table describes the features of the Medical College at Azamgarh .

**Table 4: Features of Medical College**

PARTICULARS	REQUIRED AS PER MCI	AVAILABLE AT AZAMGARH MEDICAL COLLEGE
Land	20 Acre	102.86 acre
Academic Block, Administrative Block & Central Library	100 Seats	As required for the intake of 100 seats – MBBS course
Auditorium / Examination hall	500-700 Seats	700 Seats
Teaching Hospital	500 Beds	500 Beds
Residents	85	100
Residential Complex	59 and 100% of Nursing Staff	Available as required by MCI

Source: UPRNNL & Project Site Plans

## 6.3. Project Cost Overview

The estimated cost of the project was 275.84 crore for the building & Site development out of which GOUP has released 275.84 crore. The overall physical progress of the project is 75%.

The estimated cost for medical equipments was 35 crore out of which 30 crore is been released by the GOUP for the procurement of the equipments.

**Table 5: Cost Estimates**

(Rs. Crores)

Particulars	Estimated Cost	Amt. Released	Progress*
Building & Site Development	275.84	275.84	75%
Medical Equipment	35	30	86 %

Source: UPRNNL

\* Indicative (Detailed Project Progress Report is provided in the Annexure)

## 6.4. Project Specific Obligation Identified

The key project specific obligations that were identified discussed and finalized before preparing Business Model/PPP Structure.

**Table 6: Project specific obligation**

Point of Content	Detail	Impact on the Project	Suggested Input for financial model by GOUP
Bet Lease Agreements WITH Ama Medical & Diagnostic Centre Pvt (Ama)	Bet Lease Agreements have been entered with Ama Medical & Diagnostic Centre Pvt. Ltd for setting up and operating diagnostic facilities at Azamgarh medical college.	The Bet Lease Agreement will impact the concessionaire's revenues and earnings from the project.	Ama can continue operations for the duration of the BET lease agreement. The Concessionaire can start competing facilities elsewhere in the Azamgarh College Campus. For the purpose this report it is assumed that the Concessionaire will start and operate diagnostic services in addition to those provided by Ama.
Seat Sharing	Allocation of seat between general, reserved and concessionaire categories.	No. of seats to be allocated to Concessionaire will impact the Concessionaire's revenues and earnings from the project.	The 100 medical college seats will be shared equally between GOUP and Concessionaire. Seats sharing pattern as detailed in Table 10.
Academic Fees	Academic Fees for Govt. Seats, Management and NRI Seats to be charged at this Medical Colleges	Fees will impact the Concessionaire's revenues and earnings from the project.	Fees structure shall be as per existing UP –DGME and private medical colleges in the state. Fees structure assumed is as detailed in Table 11.
Hospital Bed Sharing	No. of Beds to be under general and private category.	Hospital bed sharing pattern will impact the Concessionaire's revenues and earnings from the project.	No obligation on Concessionaire to provide subsidized beds.
User Charges	Any obligation on Hospital User charges for the hospital services under general and private beds category.	User charges will impact the Concessionaire's revenues and earnings from the project.	Concessionaire will be free to determine the user charges.
Concession Period	Concession period to be provided to the Developer.	Concession period will impact the Concessionaire's revenues and earnings from the project.	Concession period to be assumed for 50 years.

## 7. ASSUMPTIONS FOR FINANCIAL PROJECTIONS

This chapter describes the capital cost, revenue and operating cost assumptions considered for projecting the financials of the Azamgarh medical college and teaching hospital project.

### 7.1. Project Cost Assumptions

#### 7.1.1. Capital Cost

The capital cost comprises of components as detailed in the column “A” of the following table. The estimated cost of the project incurred by the GOUP is mentioned in the column “B”. Funds released till March 2010 by the GOUP for the purpose of the civil work and equipments are mentioned in column “C”.

The pending work for which GOUP has released the fund will be completed by the respective project agencies undertaking civil work/equipment. The Funds required to be invested by the Concessionaire is mentioned in the column “D”. D also includes funds to be invested by the Concessionaire on account of revision in project costs and /or change in manner of execution of the project (refer Section 8.1.2)

#### 7.1.2. Additional Equipment Cost

The additional medical equipment cost is considered on account of the Concessionaire constructing and operating the Diagnostic centre. The equipment required includes CT scan, Ultrasound, X-ray, Mammography, etc.

The detailed break-up of the project cost is provided in the following table.

**Table 7: Project Costs break-up**

(All Figures in Rs. Lakhs)

PARTICULARS [A]	INITIAL ESTIMATED COP* [B]	FUNDS RELEASED BY GOUP. [C]	FUND TO BE INVESTED BY PRIVATE PARTNER [D]	TOTAL COP [E]
Land	-	-	-	-
Building + Site Development	26,528	26,528	-	26,528
Furniture & Fittings	1,056	1,056	-	1,056
Medical Equipment	3500	3,000	500	3,500
Additional Medical Equipment	1,500		1,500	1,500
Automobiles - Ambulance & Other Vehicles	30		30	30
<b>Total Base Cost</b>	<b>32,614</b>	<b>30,584</b>	<b>2,030.00</b>	<b>32,614</b>

Source: UPRNNL and Hosmac

COP – Cost of Project

### 7.1.3. Maintenance Capital Expenditure

The medical college and hospital will undertake periodic replacement/refurbishment of the medical equipments. It is assumed that 10% of the equipment (in terms of cost) will have to be replaced every year after 10th year of the operations.

### 7.1.4. Construction phasing

The hospital project is nearly complete in terms of its civil work and orders for a number of equipments have been placed. Pending civil work (if any), equipments are assumed to be completed within 5-6 months enabling the College and Hospital to be fully functional for the academic year 2012-13.

## 7.2. Project Financing Assumptions

### 7.2.1. Means of Finance

The balance project cost would be financed at a debt/equity 0.43/1. The Debt: Equity ratio has been assumed considering the trends observed in the healthcare financing.

**Table 8: Means of Finance**

MEANS OF FINANCE	Rs. LAKH	% CONTRIBUTION
Concessionaire Contribution	1,421.00	70%
Debt	609.00	30%
<b>Total</b>	<b>2,030.00</b>	<b>100%</b>

### 7.2.2. Loan Details

The debt for financing the project will be raised on the following terms.

**Table 9: Loan Terms**

PARTICULARS	DETAILS
Loan Amount	Rs. 609.00 Lakhs
Loan Tenor	12 years
Moratorium	3 years
Rate of Interest	11.00%

Source: Industry

The Rate of Interest for the loan has been assessed at the prevailing rate of financing in the healthcare sector.

## 7.3. Income from College

### 7.3.1. Proposed Course Details

The Details of the course to be offered are provided in the following table.

**Table 10: Details of Course**

PARTICULARS	DETAILS
Course to be Offered	MBBS
No. of Seats per Batch	100
Duration of the Course	4 ½ Years

Source: DMET and Hosmac

### 7.3.2. Seats Sharing Details

The seats sharing between for GOUP and the Concessionnaire out of a total of 100 seats will be 50:50. The 50 GOUP seats will be offered to students from the reserved category, general category and those admitted via the All India Pre-Medical Test.

The Concessionnaire will have 50 seats of which, 25 seats shall be reserved for SC, ST and OBC category, 15 seats will be offered to NRI/PIO/FN and balance 10 seats will be management seats. However, the Concessionnaire shall be allowed to charge the same amount of fees from the reserved category seats as those charged to its quota of general category seats. The seat distribution is as tabulated below.

**Table 11: Details of Seats Sharing**

CATEGORY	% OF SEATS	% OF SEAT AT SUB CATEGORY LEVEL	REMARK
GOUP	50%	25 %	Government Seats – (SC+ ST+OBC : reserved Category)
		25 %	Government Seats - General Category
			All India quota to be reserved from the Government Seats
Management Seats (Concessionnaire)	50%	10 %	General Category Seats
		15 %	NRI/PIO/FN Seats
		25 %	Reserved Category Seats – (SC+ ST+OBC)

Source: GOUP

### 7.3.3. College Fees Details

The fee for the College is at par with the existing fees structure in the Government and Private Medical colleges and in line with DMET guidelines.

**Table 12: Details of Fees**

PARTICULARS	GROSS FEES (PER ANNUM) FOR GOVERNMENT SEATS	GROSS FEES (PER ANNUM) FOR MANAGEMENT SEATS
Reserved Seats	17,000	-
General Seats	26,000	4,50,000
NRI Seats	-	20,00,000
Hostel + Mess + Electricity	19,800	75,000
Deposit	10,000	1,00,000

Source: DMET and Market Survey

### 7.3.4. Occupancy of the Seats

It has been assumed that all seats including the NRI seats will be fully occupied from the 1<sup>st</sup> Year of College Operations.

### 7.3.5. Other Income from College

Admission for the Government Seats is considered to be through UP CPMT and for the management seats is considered to be through tests conducted by the Concessionaire. It is assumed that there will be three applicants per management seats who will purchase the application form at Rs.1000/form.

## 7.4. Income from Teaching Hospital

### 7.4.1. Hospital Bed Mix

The bed mix of the hospital has been considered as per the MCI guideline/requirements.

**Table 13: Bed Mix Details**

Disciplines	General	ICU*	NICU#	Burns	Total
General Medicine	120	8		2	130
Pediatrics	60	1	8		69
TB & Respiratory	20	1			21
Dermatology, Venerology & Leprosy	10				10
Psychiatry	10				10
General Surgery	120	8			128
Orthopedics	60				60
Ophthalmology	20				20
ENT	20				20
Obstetrics	36				36
Gynecology	24				24
<b>Total</b>	<b>500</b>	<b>18</b>	<b>8</b>	<b>2</b>	<b>528</b>

Source: MCI and Hosmac

\*ICU – Intensive Care Unit, #NICU – Neonatal Intensive Care Unit

### 7.4.2. Bed Occupancy of the Hospital

Bed Occupancy Rate (BOR) and Out Patient Department(OPD) are assumed as per MCI's requirement.

**Table 14: Hospital Bed Occupancy Rate Details**

PARTICULARS	LOP	1 <sup>ST</sup> RENEWAL	2 <sup>ND</sup> RENEWAL	3 <sup>RD</sup> RENEWAL	4 <sup>TH</sup> RENEWAL
Year	1	2	3	4	5 & onwards
Beds	300	350	400	450	528
BOR	70%	80%	80%	80%	80%
OPD Attendance	400	500	600	700	800

Source: MCI

LOP: Letter of Permit

### 7.4.3. Hospital Beds Distribution

MCI requires Teaching Hospitals to have 70% bed occupancy rates in the first year and 80% from the second year of operation. Empirical evidence and industry norms suggest that to meet the MCI norms, colleges charge lower fees to attract patients from the lower income strata of the population to the hospital. These beds have been categorized for the purpose of this study as 'general ward beds'.

As noted earlier Azamgarh has a Bed availability of 0.53 per 1000 population. This is considerably lower than the India average of 1.5 and World Average of 3.3 (Source- Market Survey and Hosmac Database). Hence it is expected that there is significant latent demand for quality healthcare at Azamgarh. The Teaching hospital is expected to be able to target this demand i.e. demand for 'private ward beds' during the Concession Period.

The bed sharing pattern for the financial projection assumes that maximum number of beds that can be allocated to the private ward category is 50%. It is lower in the initial years of operation so that the MCI norm of patients per student ratio can be met. The allocation of beds to the private ward ramps up subsequently. The methodology used to derive the ramp-up is provided below.

- The parameter of 'Per capita income of the location (i.e. Azamgarh District) is used as a proxy to assess the demand for private beds for in a city.
- The per capita of the Azamgarh District is compared with that of Lucknow to derive a normalised rating/score. The normalized per capita income of Azamgarh is provided in the following table.

**Table 15: Normalised Per Capita Income Score**

NAME OF THE DISTRICT	PER CAPITA INCOME IN 2008 [Rs.]	NORMALISED PER CAPITA INCOME SCORE [Rs.]
Etawah	14,420	0.59
Banda	12,435	0.51
Azamgarh	8,900	0.36
Lucknow	24,419	1.00

- Four 'ranges' of the Normalized Per Capita Income Score are created. The lower range indicates lower percentage of private ward beds initially. These are provided in the following table.

**Table 16: Beds - Normalised Per Capita Income Score Matrix**

NORMALISE SCORE RANGE	PERCENTAGE OF BEDS ALLOCATED TO THE PRIVATE WARD IN THE 1 <sup>ST</sup> YEAR
0.00 – 0.25	20%
0.26 – 0.50	30%
0.51 – 0.75	40%
0.76 - 1.00	50%

- From the 2<sup>nd</sup> year of operation of the hospital it is assumed that the allocation of beds to the private ward category increase by 5% p.a. to reach 50%.
- Azamgarh district obtained a normalized per capita income score of 0.36. Hence it is assumed that private beds in the first year will be 40% of total number of available beds in first year.
- It is assumed that both the General and Private Wards have an occupancy ratio that meets MCI requirements.

The details of bed distribution have been provided in the following table.

**Table 17: Hospital Bed Distribution**

NO.	PARTICULARS	AT INCEPTION	1 <sup>ST</sup> RENEWAL INSPECTION	2 <sup>ND</sup> RENEWAL INSPECTION	3 <sup>RD</sup> RENEWAL INSPECTION	4 <sup>TH</sup> RENEWAL INSPECTION
1	Years	1	2	3	4	5
2	Average Occupancy Required as per MCI	70%	80%	80%	80%	80%
3	<b>Total Available Beds</b>	<b>300</b>	<b>350</b>	<b>400</b>	<b>450</b>	<b>528</b>
4	% of General Beds	70%	65%	60%	55%	50%
5	General Beds Available [3 x 4]	210	228	240	248	264
6	Occupied General Category Beds [2 x 5]	147	182	192	198	211
7	% of Private Beds	30%	35%	40%	45%	50%
8	Private Beds Available [3 x 7]	90	123	160	203	264
9	Occupied Private Category Beds [2 X8]	<b>63</b>	<b>98</b>	<b>128</b>	<b>162</b>	<b>211</b>
10	Total Occupied Beds [6+9]					

NO.	PARTICULARS	AT INCEPTION	1 <sup>st</sup> RENEWAL INSPECTION	2 <sup>nd</sup> RENEWAL INSPECTION	3 <sup>rd</sup> RENEWAL INSPECTION	4 <sup>th</sup> RENEWAL INSPECTION
		210	280	320	360	422

Source: MCI, Market Survey and Hosmac

#### 7.4.4. Hospital User Charges

The user charges for general ward are assumed to be at par with other Government Medical Colleges/DGME Notification and charges for private ward are derived by the following methodology mention below:

- The fees charged at a Leading Private Hospital in Lucknow are considered as the base rates. These are subsequently modified to reflect the paying capability of Azamgarh.
- The base rates are first discounted by 20% as the Lucknow Hospital is considered to be a 'premier hospital'.
- These rates are further discounted by the normalized per capita income factor of 0.36 (derivation provided above) to arrive at the charges for the services under private beds.
- If the charges for any particular services for private ward determined as per above methodology are lower than the general ward charges, then the charges have been assumed to be equal to the general ward charges.
- The charges considered for the investment assessment study are mentioned below.

**Table 18: Hospital User Charges**

DEPARTMENT	AVG. RATE PER CASE GENERAL WARD (Rs.)	AVG. RATE PER CASE PRIVATE WARD (Rs.)
General	7	280
General	7	144
ICU	7	576
NICU	7	576
Burns	7	7
Deluxe	NA	-
Single occupancy (Special)	NA	-
Twin Semi Private	NA	-
Day Care	NA	-
OPD Consultation - All Inclusive	1	40
Casualty	1	40
Pathology	30	63
Blood Bank & Components	250	250
CT-scans	700	700
X Ray Plain + Special	30	40
X Ray - Dental	5	29
Sonography/USG	150	150
Dialysis	350	350
Dental Procedure	30	72

DEPARTMENT	AVG. RATE PER CASE GENERAL WARD (Rs.)	AVG. RATE PER CASE PRIVATE WARD (Rs.)
ECG	50	50
2D-Echo	100	181
TMT	200	202
EEG	150	202
EMG / NCV	300	300
ENT Screenings	150	150
Mammography	50	173
Normal Deliveries	300	1,210
Caesarian Section	550	1,296
Minor Surgery (All Inclusive of Surgeon + Anesthetists+ OT Charges)	400	756
Intermediate Surgery (All Inclusive of Surgeon + Anesthetists + OT Charges)	900	1,958
Major Surgery (All Inclusive of Surgeon + Anesthetists +OT Charges)	1,500	3,528
Physiotherapy	40	40
Pharmacy - IP	700	700
Pharmacy - OP	200	200
Consumables - Minor & Intermediate Level Surgery	500	500
Consumables - Major Surgery	1,500	1,500

#### 7.4.5. Bed Days & Average Length of Stay (ALOS) Assumed

The average length of stay (ALOS) assumed to be 5.5. This is based on the assessment of ALOS of the teaching hospital of Rural Institute of Medical Sciences (RIMS), Safai and other Government/Private Medical Colleges in UP.

#### 7.4.6. Hospital Productivity Assumed

The average case load is based on the assessment of the average work load at RIMS and other private medical colleges in UP. The details of the same are given below.

**Table 19: Hospital Productivity Assumed**

DEPARTMENT	AVERAGE/DAY	AVERAGE/MONTH
OPD Consultation - All Inclusive	1,200	36000
Casualty	85	2550
Pathology	750	22500
Blood Bank & Components	12	360
CT-scans	14	420
X Ray Plain + Special	100	3000
X Ray – Dental	10	300
Sonography/USG	45	1350
Dialysis	1.25	37.5

DEPARTMENT	AVERAGE/DAY	AVERAGE/MONTH
Dental Procedure	10	300
ECG	30	900
2D-Echo	5	150
TMT	4	120
EEG	2	60
EMG / NCV	1.25	37.5
ENT Screenings	6	180
Mammography	0.2	4.5
Normal Deliveries	12	360
Caesarian Section	2	60
Minor Surgery (All Inclusive of Surgeon + Anesthetists + OT Charges)	17	510
Intermediate Surgery (All Inclusive of Surgeon + Anesthetists + OT Charges)	12	360
Major Surgery (All Inclusive of Surgeon + Anesthetists + OT Charges)	5	150
Physiotherapy	30	900
Pharmacy – IP	528	15840
Pharmacy – OP	1,200	36000
Consumables - Minor & Intermediate Level Surgery	43	1290
Consumables - Major Surgery	5	150

Source: Market Survey

#### 7.4.7. Miscellaneous Income

Miscellaneous income from other non hospital related activities like Cafeteria, Ambulance, Rent from Shops and Banks, Parking/Gate Passes are assumed as per industry norms.

### 7.5. Operating Expenses

#### 7.5.1. Staff Requirement

A total manpower required and its ramp up is assumed as per MCI guidelines for medical college and teaching hospital. Wherever MCI does not specify the number of the staff for any category/department, the number is based on the healthcare industry norm/trends or as required for the project. The total number of staff required per year is as tabulated below:

**Table 20: Staff Requirement Details**

STAFF CATEGORY	LOP*	1ST RENEWAL	2ND RENEWAL	3RD RENEWAL	4TH RENEWAL
Year	1	2	3	4	5 & Onwards
Teaching Staff	53	93	114	117	117
Resident Doctors	42	57	82	85	85
Non Teaching Staff	101	160	179	179	179
Nursing Staff	175	209	238	258	284
Total Staff Required	371	519	613	639	665
Other Staff Required	117	140	164	187	234

STAFF CATEGORY	LOP*	1ST RENEWAL	2ND RENEWAL	3RD RENEWAL	4TH RENEWAL
<b>Total Staff</b>	<b>488</b>	<b>659</b>	<b>776</b>	<b>826</b>	<b>899</b>
% of Staff compared to total staff required in 5 <sup>th</sup> Yr.	54%	73%	86%	92%	100%

Source: MCI and Hosmac

\* LOP – Letter of Permit

### 7.5.2. Salary Assumption

The salaries for the academic staff, salaries are determined per the UP Government pay scale (after considering for 6th pay commission impact). The salaries for Non-teaching and other staff are at par with private hospital salary scale. Bonus, Gratuity, EPF & Allowances are considered at 15% of annual salary per annum.

**Table 21: Staff and Salary Details**

DESIGNATION	NO. OF STAFF	SALARY/ MONTH (Rs.)	SALARY/ ANNUM (Rs.)
Director / Principal	1	90,000	1,080,000
Coordinator (Head of a dept. nominated by Principal/Dean.)	1	76,000	912,000
Professor / HOD	21	76,000	19,152,000
Associate Professor	24	45,000	12,960,000
Asst Prof	47	30,000	16,920,000
Tutor / Demons.	30	20,000	7,200,000
Technical Assistant / Technicians	75	12,000	10,800,000
Dissection Hall Attendants	4	9,000	432,000
Steno Typist	14	5,000	840,000
Store keeper / Clerk / Computer operator	25	5,500	1,650,000
Sweeper	20	3,500	840,000
Lab Attendant	23	9,000	2,484,000
Epidemiologist	1	15,000	180,000
MSW	5	12,000	720,000
Medical Officers	2	18,000	432,000
Nurses	3	14,000	504,000
Health Inspectors / H Asst	5	12,000	720,000
Health Educator	3	12,000	432,000
Peon	2	4,000	96,000
Van Driver	2	4,000	96,000
Senior Resident	29	25,000	8,700,000
Junior Residents	58	20,000	13,920,000
Psychologist	2	25,000	600,000
Therapist	6	20,000	1,440,000
Physicist	1	18,000	216,000
<b>Hospital &amp; Ancillary Staff</b>			
Chief Medical Superintendent	1	65,000	780,000
Nursing Superintendent 1 (for minimum of 150 beds)	3	40,000	1,440,000

<b>DESIGNATION</b>	<b>NO. OF STAFF</b>	<b>SALARY/ MONTH (Rs.)</b>	<b>SALARY/ ANNUM (Rs.)</b>
Deputy Nursing Superintendent	1	35,000	420,000
Assistant Nursing Superintendent (for minimum of 150 beds)(for every additional 50 beds one more Assistant Nursing Superintendent)	8	25,000	2,400,000
Staff Nurse	226	10,000	27,120,000
Sister	35	18,000	7,560,000
Dieticians	3	18,000	648,000
Supervisors / Senior Executives - Stores, Accounts, Purchase, Billing, Front office)	8	12,000	1,152,000
Executives / Office Assistants	15	8,000	1,440,000
Receptionists, Front Office, Billing, Steno Typist	12	6,000	864,000
Telephone Operator	3	5,000	180,000
Security	6	4,000	288,000
Ambulance & driver pool	2	4,000	96,000
Senior Pharmacists	5	12,000	720,000
Junior Pharmacists	8	9,000	864,000
<b>Central Record Section</b>			
Medical Record Officer	1	15,000	180,000
Statistician	1	12,000	144,000
Coding Clerks	4	8,500	408,000
Record Clerks	6	6,500	468,000
Daftaries	2	5,000	120,000
Peons	2	4,000	96,000
Steno typist	1	5,000	60,000
<b>Central Animal House</b>			
Veterinary Officer	1	14,000	168,000
Animal Attendants	2	10,000	240,000
Technicians for animal operation room	1	8,000	96,000
Sweepers	2	3,000	72,000
<b>Central Library</b>			
Librarian with a degree in Library Science	1	14,000	168,000
Deputy Librarian	1	12,000	144,000
Documentalist	1	9,000	108,000
Cataloguer	1	7,000	84,000
Library Assistants	4	7,000	336,000
Daftaries	2	5,000	120,000
Peons	2	4,000	96,000
<b>Central Photographic Cum Audiovisual Unit</b>			
Photographers	1	6,500	78,000
Artist Modelers 1 each	2	6,500	156,000
Dark Room Assistant	1	6,500	78,000
Audiovisual Technician	1	6,500	78,000

DESIGNATION	NO. OF STAFF	SALARY/ MONTH (Rs.)	SALARY/ ANNUM (Rs.)
Store Keeper cum Clerk	1	6,500	78,000
Attendant	1	4,000	48,000
<b>Central Sterilization Services Department</b>			
Matron	1	20,000	240,000
Staff Nurse	4	10,000	480,000
Technical Assistant	8	9,000	864,000
Technician	8	7,500	720,000
Ward Boys	8	4,000	384,000
Sweeper	4	3,000	144,000
<b>Laundry</b>			
Supervisor	2	9,000	216,000
Dhobi/Washer man/Women	12	4,000	576,000
Packer	12	4,000	576,000
<b>Blood Bank</b>			
Professor /Reader	1	55,000	660,000
Lecturer	1	35,000	420,000
Technicians	6	13,000	936,000
Laboratory Attendants	6	9,000	648,000
Store Keepers	6	6,500	468,000
Record Clerks	2	6,000	144,000
<b>Central Casualty Services</b>			
Casualty Medical Officer	4	20,000	960,000
Stretcher bearers	6	4,000	288,000
Receptionist-cum-clerks	2	6,000	144,000
Ward boys	6	4,000	288,000
Nursing and Para-medical staff	6	-	-
<b>Central Workshop</b>			
Superintendent – who shall be a qualified engineer	1	20,000	240,000
Senior Technicians 4 (Mechanical, Electrical, Electronic, Refrigeration)	4	14,000	672,000
Junior Technicians	2	10,000	240,000
Blacksmith	1	6,500	78,000
Attendants	4	4,000	192,000
<b>Total per Annum</b>	<b>899</b>		<b>163,500,000</b>
Add : Margin for Bonus, Gratuity, EPF & Allowances		15%	24,525,000
<b>Grand Total</b>			<b>188,025,000</b>

Source: Hosmac

### 7.5.3. Hospital's Departmental Expense

Departmental consumable expenses are assumed in the range of 5-15% considering industry norms.

### 7.5.4. Hospital Doctor's Fee/Share

General Ward: Doctors fees/share are not considered for the revenue generated from the general ward except in the case of surgery wherein 10% of the surgery fees is considered as a surgeon fees i.e. doctors share.

Private Ward: A doctor fees/share is considered at 5% and surgeon's fee is considered to be 10%.

### 7.5.5. Miscellaneous Expense

The various miscellaneous expenses like Canteen & Mess, Water, Cooking Gas, Medical Gas, Electricity, Laundry & Linen, Housekeeping, etc based on industry norms.

**Table 22: Miscellaneous & Other Expense**

PARTICULARS	QUANTUM	UNIT
Cost of Book & Periodical	Rs. 10,000	per month
Repairs & Maintenance	0.10%	of total Cost of Project
Printing & Stationery	Rs. 10,000	per month
Travel & Conveyance	Rs. 20,000	per month
Communication Cost	Rs. 40,000	per month

Source: Hosmac

### 7.5.6. MCI Application and Inspection Fees

MCI application & registration fees, bank guarantee and annual fees for the inspection are as per prevailing MCI guidelines. The application fee of Rs. 3,50,000 for registration of the medical college, technical scrutiny and five year inspection is spread over five years. Applicant also needs to provide a bank guarantee of Rs.150 lakh for a 100 seat medical college and Rs. 550 Lakh for the teaching hospital which is valid for five year period. Bank Charges of 1.5% of total bank guarantee amount is assumed for initial five years.

**Table 23: MCI Application & Inspection Fees Details**

PARTICULARS	INCEPTION FEE	PER ANNUM FEE AFTER 5TH YR.
Application Fee (Registration + Technical Scrutiny+ 5 Inspection)	Rs.350,000	Rs.50,000
Bank Guarantee – College	Rs.15,000,000	To be valid for 5 years
Bank Guarantee – Hospital	Rs.55,000,000	To be valid for 5 years

Source: MCI Website

### 7.5.7. Creditors & Debtors Period

5% of the hospitals patients are assumed to require one month's credit for settling their bills.. Inventory holding period is assumed to be one month. Suppliers are expected to provide credit of a month.

### 7.5.8. Depreciation Rate

The depreciation rate considered for Straight Line and Written Down Value method for the capital assets is tabulated below.

**Table 24: Depreciation rate**

DEPRECIATION RATES	SLM	WDV
Land	0.00%	0.00%
Building	3.34%	10.00%
Furniture & Fittings	6.33%	10.00%
Medical Equipment	15.00%	15.00%
Non-medical Equipment	15.00%	15.00%
Automobiles	10.00%	10.00%

### 7.6. Treatment of BPL Patients

The Concessionaire shall, in the first year of the COD of the Medical College be required to create a reserve of Rs. 10,00,000 (Ten) lakhs as a separate earmarked fund to be called BPL Patients Treatment Fund from which it shall fund the treatment of BPL Patients. After the end of the first year of the Term, the BPL Patients Treatment Fund shall be funded by appropriating 1% of Gross Revenue from the Hospitals earned by the Concessionaire in the previous year.

### 7.7. Income Tax Rate

The Rate of Income Tax is assumed at 33.99% and Minimum Alternate Tax (MAT) at 19.931%.

### 7.8. Inflation Factor

All revenues (including college and hospital fees) and expenses are assumed to escalate at 5% p.a.

### 7.9. Concession Period

GOUP intends to allow the Concessionaire a 50 year term for operating and managing the Medical College and Allied Infrastructure. The same has been used for the purpose of the projections.

## 8. ANALYZING THE PROJECT'S FINANCIALS

This chapter presents an assessment of the project's financials and returns from the Concessionaire's point of view. It also assesses the sensitivity of the project returns to key variables.

### 8.1. Evaluating the project revenues and expenses

The financials of the Azamgarh Medical College have been projected for 50 years. This is line with GOUP's desired concession period.

In the initial 2 years majority of the revenue is contributed by the hospital. From 3<sup>rd</sup> year onwards Revenues from college and hospital contribute approximately equally to the earnings. Salaries and consumables are primary drivers of expenses at the hospital.

**Table 25: Project Revenues and Expenses (Rs. Lakh)**

PARTICULARS / YEAR	1	10	20	30	40	50
<b>INCOME</b>						
Academic Revenue – UG	517	3,602	5,867	9,557	15,568	25,359
Total Income from General Ward	706	1,571	2,559	4,169	6,790	11,061
Total Income from Pvt. Ward	379	1,970	3,209	5,228	8,515	13,871
<b>Total Revenues</b>	<b>1,602</b>	<b>7,144</b>	<b>11,636</b>	<b>18,954</b>	<b>30,874</b>	<b>50,290</b>
<b>EXPENSES</b>						
Total Salary Expense-UG	1,316	2,917	4,751	7,739	12,607	20,535
Total Dept. Expense	582	1,830	2,981	4,855	7,909	12,883
Total Misc. Exp.	263	797	1,297	2,113	3,441	5,605
Library (Books & Periodicals)	1	1	1	1	1	1
Repairs & Maintenance	33	51	82	134	219	356
Printing & Stationery	1	2	3	5	8	13
Travel & Conveyance	2	4	6	10	16	26
Communication Costs	5	7	12	20	32	52
Insurance	82	49	34	20	30	51
Audit	1	2	3	4	7	11
<b>Treatment of BPL Patients</b>	<b>10</b>	<b>34</b>	<b>55</b>	<b>89</b>	<b>146</b>	<b>237</b>
<b>Total Expenditure</b>	<b>2,296</b>	<b>5,692</b>	<b>9,225</b>	<b>14,991</b>	<b>24,416</b>	<b>39,771</b>
<b>PBDIT (a-b)</b>	<b>(694)</b>	<b>1,451</b>	<b>2,411</b>	<b>3,963</b>	<b>6,458</b>	<b>10,519</b>
Depreciation	1,706	956	1,851	2,486	2,635	4,320
Interest on Term Loan	67	19	0	0	0	0
<b>PBT</b>	<b>(2,467)</b>	<b>477</b>	<b>559</b>	<b>1,477</b>	<b>3,823</b>	<b>6,198</b>
Less: Tax	0	95	111	788	1,322	2,160
<b>PAT</b>	<b>(2,467)</b>	<b>382</b>	<b>448</b>	<b>689</b>	<b>2,501</b>	<b>4,038</b>

Source: Hosmac and CRIS Analysis

## 8.2. Analysis of key financial parameters

Details of the key financial indicators has been provided in the table below and analyzed subsequently.

**Table 26: Key Financial Indicators**

YEAR	1	5	10	20	30	40	50
Revenue per patient day (Rs.)	1,415	1,800	2,297	3,742	6,095	9,928	16,171
Manpower costs to Total Revenues	82%	41%	41%	41%	41%	41%	41%
EBITDA Margin	-43%	20%	21%	21%	21%	21%	21%
Net Profit Margin	-154%	-12%	5%	4%	4%	8%	8%
Project IRR							22%
Equity IRR							23%

Source: Hosmac and CRIS Analysis

### **Revenue per Bed per Day (RBBPD)**

The teaching hospital expected to earn revenue of Rs. 1800 per bed per day in the fifth year of operations. RBBPD is comparatively on lower side compared to multi specialty hospitals in cities mainly due to lower user charges, given that this is a teaching hospital.

### **Manpower cost**

Manpower cost is higher in the first year at 82% of total revenue and initial four to five years mainly due to less number of students and lesser number private beds. After 5<sup>th</sup> year manpower cost is within the industry norm at 41% of total revenue.

### **Profitability**

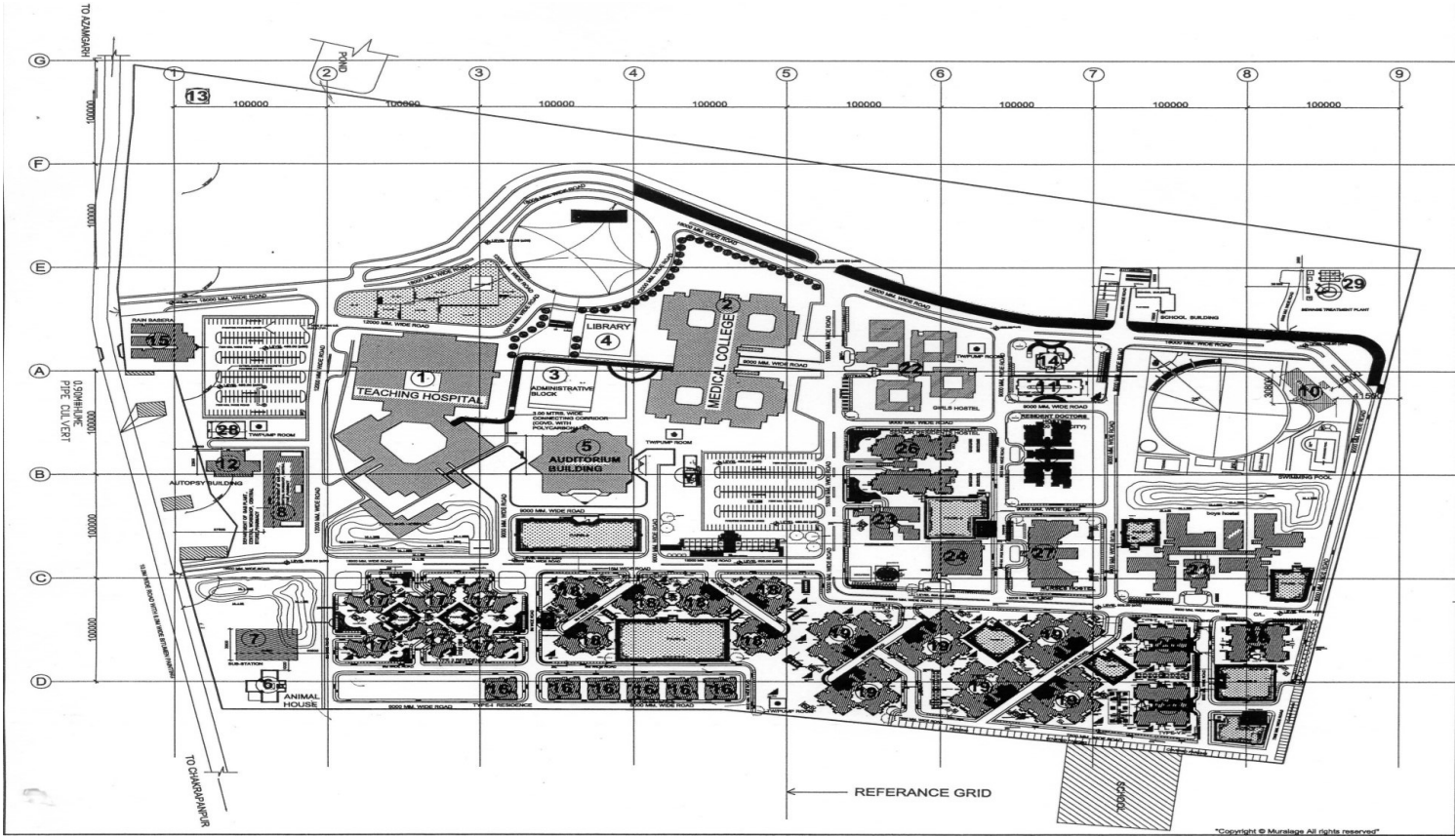
The college and hospital is expected to earn on an average an operating margin (EBITDA) of 18% which is in line with industry's margins. The net profit (PAT) margin is low in first five to six years due to high interest costs and depreciation along with less number of students. However, post loan repayment and depreciating the assets for significant percentage of their value, the net profit margin increases to 8%.

### **Internal Rate of Return**

The expected project IRR for this project is estimated to be 22% and Equity IRR of 23 %.

### 9. ANNEXURE

The Site Master Plan for the Azamgarh Medical College is given below.



Source: UPRNNL