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Consultation Paper No. 3/2009-10

Airports Economic Regulatory Authority of India

Regulatory Philosophy and Approach in Economic Regulation of Airports and Air Navigation Services

New Delhi: 26th February, 2010

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TABLE OF CONTENTS

Part IV - Regulatory Philosophy and Approach in Economic Regulation of Cargo Facility Operators, Ground Handling Operators and Fuel Farm Operators / Fuel Access Providers

Part V – Sumamry of Positions

Part VI - Technical Appendices

LIST OF ABBREVIATIONS

AAI	Airports Authority of India
ACCC	Australian Competition & Consumer Commission
ACI	Airports Council International
ACSA	Airports Company South Africa
AERA	Airports Economic Regulatory Authority
AIC	Aeronautical Information Circular
ANS	Air Navigation Services
APAO	Association of Private Airport Operators
APEDA	Agricultural & Processed Food Products Export Development Authority
APT	Arbitrage Pricing Theory
ATF	Aviation Turbine Fuel
ATM	Air Traffic Movement
ATNS	Air Traffic and Navigation Services, South Africa
AUCC	Airport Users Consultative Committee
BCAS	Bureau of Civil Aviation Security
CAA	Civil Aviation Authority
CAGR	Compound Annual Growth Rate
CAPM	Capital Asset Pricing Model
CAR	Commission for Aviation Regulation, Ireland
CC	Competition Commission, United Kingdom
CERC	Central Electricity Regulatory Commission
CIAL	Cochin International Airport Limited
CII	Confederation of Indian Industry
CIQ	Customs, Immigration and Quarantine
CPI	Consumer Price Index
DAA	Dublin Airport Authority, Ireland
DERC	Delhi Electricity Regulatory Commission
DF	Development Fee
DGCA	Directorate General of Civil Aviation
DGFT	Directorate General of Foreign Trade
DGM	Dividend Growth Model
DIAL	Delhi International Airport Limited
DORC	Depreciated Optimized Replacement Cost
DV	Deprival Value
EBITDA	Earnings before Interest, Taxes, Depreciation and Amortization
EICI	Express Industry Council of India
EMRP	Equity Market Risk Premium

EPC	Engineering, Procurement and Construction
EXIM	Export and Import
FAST	Foundation of Aviation and Sustainable Tourism
FIA	Federation of Indian Airlines
FICCI	Federation of Indian Chambers of Commerce & Industry
GDP	Gross Domestic Product
GoI	Government of India
HC	Historical Cost
HIAL	Hyderabad International Airport Limited
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IHC	Indexed Historical Cost
IMG	Inter-Ministerial Group
IRR	Internal Rate of Return
JV	Joint venture
LRMC	Long Run Marginal Cost
MoCA	Ministry of Civil Aviation
MT	Metric Tonne
NPV	Net Present Value
O&M	Operation and Maintenance
ODV	Optimised Deprival Value
OMDA	Operation, Management and Development Agreement
PPP	Public Private Partnership
PSF	Passenger Service Fee
RAB	Regulatory Asset Base
RFR	Risk Free Rate
RNFC	Route Navigation Facility Charge
ROCE	Return on Capital Employed
SERC	State Electricity Regulatory Commission
SLA	Service Level Agreement
SSA	State Support Agreement
TAMP	Tariff Authority for Major Ports
TNLC	Terminal Navigational Landing Charges
TSP	Terminal Storage and Processing
UDF	User Development Fees
WACC	Weighted Average Cost of Capital
WIP	Work in Progress
WPI	Wholesale Price Index

Part I – General

1. PREFACE

Pursuant to the enactment of the "The Airports Economic Regulatory Authority of India Act, 2008" (hereinafter referred as the 'Act') and establishment of the Airports Economic Regulatory Authority (hereinafter referred as the 'Authority'), the Authority is to perform the following functions in respect of major airports:

- to determine the tariff for the aeronautical services;
- to determine the amount of the development fees in respect of major airports;
- to determine the amount of the passengers service fee levied under rule 88 of the Aircraft Rules, 1937 made under the Aircraft Act, 1934; and
- to monitor the set performance standards relating to quality, continuity and reliability of service as may be specified by the Central Government or any authority authorised by it in this behalf.

The Authority's mandate to determine the tariff for aeronautical services; and to determine the rate of the Development Fee (DF) and User Development Fee (UDF); and to determine the amount of Passenger Service Fee (PSF), in respect of major airports, has been suitably incorporated in the Airports Authority of India Act, 1994, and the Aircraft Rules, 1937, as well.

Recognising the need for ensuring transparency while exercising its power and discharging its functions, the Authority had issued a White Paper on "Regulatory Objectives and Philosophy in Economic Regulation of Airports and Air Navigation Services" ('White Paper') on 22nd December 2009 (Appendix 1). The White Paper provided stakeholders an opportunity to consider the issues highlighted therein and submit evidence-based feedback, comments and suggestions.

The Authority received 28 submissions with respect to the White Paper as listed in the document at Appendix 2. The submissions have been put up on the Authority's website for general information and for the sake of completeness. The Planning Commission, Government of India, also sent a response, which is also listed at Appendix 2. The Authority has considered various views and opinions submitted in response to the White Paper. References to such submissions in this paper may not be exhaustive as the emphasis in drafting this paper has been on discussing issues concisely.

The Authority has now prepared this Consultation Paper listing out the major issues impacting formulation of its regulatory philosophy and approach and laying out its rationale for the positions / approach it is presently minded to take. For the sake of convenience, a 'summary of positions' has been attempted in Part V of this Paper.

This Consultation Paper has been prepared with the intention of providing a further opportunity to stakeholders to make relevant submissions to the Authority before it finalises its Regulatory Philosophy and Approach.

The Authority welcomes written evidence-based (with respect to data on present context, on-ground realities, etc.) feedback, comments and suggestions from stakeholders on its proposed positions / approach, as summarised in Part V. Comments / submissions may please be furnished to the Authority, **latest by Friday 19th March 2010**, at the following address:

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Yashwant S. Bhave
Chairperson

2. BACKGROUND

2.1 The White Paper highlighted the legislative and regulatory framework governing the civil aviation sector in India. As highlighted therein, the Central Government alone has the legislative and executive powers relating to airports and air navigation services and primary responsibility for development of airports rests with the Central Government.

2.2 Also, as noted in the White Paper, various functions pertaining to oversight of the aviation sector in India have been, hitherto, discharged by different authorities viz. the Ministry of Civil Aviation (MoCA), Director General of Civil Aviation (DGCA), Bureau of Civil Aviation Security (BCAS), and Airports Authority of India (AAI).

2.3 Under the Act, the Authority's mandate covers determination of tariffs for aeronautical services, user charges and monitoring of set performance standards in respect of major airports.

A. The Authority's Purview

2.4 Major airports have been defined under the Act as follows:

"major airport means an airport which has, or is designated to have, annual passenger throughput in excess of one and a half million or any other airport as the Central Government may, by notification, specify as such"

2.5 As per traffic statistics for 2008-09, presently twelve (12) airports in the country, viz. at Mumbai, Delhi, Chennai, Bangalore, Kolkata, Hyderabad, Cochin, Ahmedabad, Goa, Trivandrum, Pune and Calicut have annual passenger throughput in excess of one and a half million and would come under the Authority's purview for the purpose of economic regulation.

2.6 As mentioned in the White Paper, these 12 airports have differences in ownership and management structure:

(a) 2 airports – Mumbai and Delhi being leased airports of AAI under PPP management, with majority private participation;

(b) 3 airports – Bangalore, Hyderabad and Cochin being private airports;

(c) 5 airports – Chennai, Kolkata, Ahmedabad, Trivandrum and Calicut being airports under the Airports Authority of India; and

(d) 2 airports – Goa and Pune being Civil Enclaves at defence airfields, managed and operated by the Airports Authority of India.

2.7 The AAI Act defines civil enclaves as "*the area, if any, allotted at an airport belonging to any armed force of the Union, for use by persons availing of any air transport services from such airport or for the handling of baggage or cargo by such service, and includes land comprising of any building and structure on such area*".

2.8 As per Section-F of the schedule of Airport Charges of Airports Authority of India (w.e.f. 1st March, 2009), at Civil Enclaves, charges like Passenger Service Fee and X-Ray Baggage Charges are payable to AAI, Landing Charge is payable to Defence and Parking Charges are payable to AAI wherever Apron is constructed by AAI.

2.9 As per Section 4 of the Act pertaining to composition of the Authority:

"*Provided that whenever the Authority is deciding a matter involving a civil enclave in a defence airfield, there shall be an additional Member, not below the rank of Additional Secretary to the Government of India, to be nominated by the Ministry of Defence.*"

2.10 Further as per the amendments to the Airports Authority of India Act, 1994, amendments to Aircraft Rules, 1937 (as noted in paragraphs 4.166 and 4.167 of the White Paper respectively), and amendment to the Aircraft Act, 1934 pursuant to Section 54 of the Act, operators at 'major airports' would henceforth be able to levy the tariff of charges, Development Fee, User Development Fee and the Passenger Service Fee pursuant to determination under the Act.

2.11 Accordingly, in addition to the airports mentioned above, existing or greenfield airports that may in future qualify as 'major airports' as defined under the Act, would need to approach the Authority for determination of their tariff.

2.12 The Authority expects that such airports would approach it in future with details on their designated capacity and / or their annual passenger throughput data while seeking determination of their tariff. It is also expected that the Central Government while granting concession / approval in respect of such aspects would also keep the Authority informed and also consider following a consultative process with respect to planned capacity and consequently the potential investment in such airports.

2.13 The Act also provides for the Government of India to notify other airports as 'major airports' from time to time and the Authority expects to discharge its functions in respect of such airports as well.

2.14 The Authority is conscious of the need to provide stability of regulatory regime for airports under its purview as well as respective airport users in terms of

the entity responsible for their economic regulation, the principles of economic regulation and period of regulatory purview, in the event of any variation in annual passenger throughput vis-à-vis the threshold figure of one and a half million at any of such airports. Accordingly, it has taken up the matter with the Central Government. It is expected that the Central Government would, soon, notify all airports listed in paragraph 2.5 as major airports so that the regulatory regime is not impacted even if there is a variation in annual passenger throughput at any of these airports during a regulatory cycle.

3. REGULATORY OBJECTIVES & PRINCIPLES

3.1 This section outlines the Authority's regulatory objectives for economic regulation and the principles for the regulatory process.

A. Objectives

3.2 The White Paper had discussed the issue of defining objectives for economic regulation in respect of major airports with reference to the objectives of the Act, provisions of the Act, policies enunciated by ICAO, international examples and the context of Indian airports.

3.3 It is worthwhile here to bring out again that the Act was enacted to achieve the following objectives:

"*The basic objectives of AERA are to create a level playing field and foster healthy competition amongst all major airports (government owned, PPP – based, Private), encourage investment in airport facilities, regulation of tariffs of aeronautical services, protection of reasonable interests of users, operation of efficient, economic and viable airports.*" [1]

3.4 The Act provides for the Authority to take into consideration the following factors while determining tariffs for aeronautical services in respect of major airports:

(a) The capital expenditure incurred and **timely investment** in **improvement of airport facilities**;

(b) The **service provided**, its **quality and other relevant factors**;

(c) The cost for **improving efficiency**;

(d) **Economic and viable operation** of major airports;

(e) **Revenue received from services other than aeronautical services**;

(f) The **concession offered** by the Central Government in any agreement or memorandum of understanding or otherwise;

(g) Any other factor that may be relevant for the purposes of the Act.

3.5 The Authority received no specific submissions with respect to the possible formulation of regulatory objectives presented in the White Paper. The Authority has reviewed the formulation presented in the White Paper and is minded to set for itself the following broader objectives for economic regulation in respect of major airports as presented below while discharging its functions under the Act.

[1] Statement of Objects and Reasons accompanying the Bill

3.6 Objectives for economic regulation:

(a) Facilitating wider policy aims for the aviation sector through the regulation of major airports, recognising their role in the sector and economy;

(b) Protecting and promoting the interests of existing and future users of major airports and air navigation services through provision of quality services commensurate with the respective tariffs/ charges, keeping in particular focus the interests of passengers and cargo facility users and the user expectations;

(c) Promoting investment in airports and air navigation services and their effective management so that all reasonable demands for airport services are met efficiently.

B. Operationalising the Objectives for Economic Regulation

3.7 The Authority will operationalise these broader regulatory objectives through the following three key parameters:

(a) Viable operations of airports in terms of maintaining investor confidence of a fair rate of return on 'net investment'[2] in those airports. For this purpose it will attempt to incentivise efficient airport investment and operations while ensuring their fair remuneration.

(b) Specification of a framework and qualitative and quantitative parameters to ensure that the quality of service provided at airports while determining tariffs is consistent with the net investment in those airports and the user expectations.

(c) Ensuring efficiency, adequacy and consistency in provision of air navigation services by encouraging efficient and appropriate investment through a fair rate of return.

C. Principles of Regulatory Process

3.8 With reference to statutory functions prescribed under the Act and its broader objectives for economic regulation in respect of major airports, the Authority is minded to bear in mind the two key principles with respect to the regulatory process it intends to follow in future, viz.

(a) Transparency through a Consultative Process; and

[2] Relevant aspects in this regard have been discussed in further detail later in this document.

(b) Consistency and Predictability in Regulatory Policy.

Transparency through a Consultative Process

3.9 The Act provides a guiding principle on the regulatory process to be followed by the Authority while discharging its statutory functions in terms of provision of Section 13 (4) which states that:

"*The Authority shall ensure transparency while exercising its power and discharging its functions, inter alia, -*

(a) by holding due consultations with all stake-holders with the airport;

(b) by allowing all stake-holders to make their submissions to the authority; and

(c) *by making all decision of the authority fully documented and explained.*"

3.10 The Authority received strong support for this principle through the submissions made by stakeholders in response to the White Paper, with some stakeholders submitting that this principle be adopted, whilst ensuring appropriate safeguards are applied relating to commercial confidentiality.

3.11 The Authority believes that a transparent and consultative process would be very important for enabling the stakeholders to constructively participate in the decision process. It is therefore minded to ensure transparency while discharging its functions under the Act.

3.12 In view of the internationally accepted practice of consultations between service providers and users, the Authority is also minded to engrain stakeholder consultations (for example between airports and users with respect to planned airport development) in the regulatory process it intends to follow.

Consistency and Predictability in Regulatory Policy

3.13 The Authority recognises that airports are complex, capital intensive businesses and demand for airport services is growing and is expected to grow in the foreseeable future. Airport investment cycles involve periodic large, lumpy investment in long-lived assets to support that growth, thereby ensuring that quality services can be provided when required. The long lives of the assets mean that investors look to a stream of income, sometimes over a number of decades, to warrant their decision to provide the finance.

3.14 Submissions in response to the White Paper supported the principle of consistency and predictability in regulatory policy over time, especially in the

context of stability of regulatory regime conducive to securing future investment into the sector.

3.15 In view of the above, the Authority recognises the need for regulation to be consistent and predictable over time, in order to minimise the potential of investors' perception of regulatory risk, whilst balancing this requirement with reference to its broader regulatory objectives outlined in paragraph 3.6.

3.16 In line with paragraph 3.15, where in its opinion, its broader regulatory objectives require a reconsideration and revision of any regulatory policy going forward, the Authority will consider the potential impact of such revision on service providers as well as users and will seek to implement any such revision while balancing the interests of both service providers and users.

3.17 The broader regulatory objectives and principles highlighted in this section would guide the Authority's regulatory policy in dealing with specific issues across different airports / contexts.

4. SCOPE AND FORM OF REGULATION

4.1 Section 13 (2) of the Act provides for the Authority to *"determine the tariff (for aeronautical services) once in five years and may if so considered appropriate and in public interest, amend, from time to time during the said period of five years, the tariff so determined"*. The Authority will be governed by the aforesaid provision on the issue of periodicity of tariff determination (regulation).

A. Scope of Regulation

4.2 This sub-section presents the Authority's consideration of, and approach to, the issue of types of aeronautical services for economic regulation with respect to the Act.

4.3 Section 2 (a) of the Act defines aeronautical services as any service provided:

(a) for navigation, surveillance and supportive communication thereto for air traffic management;

(b) for the landing, housing or parking of an aircraft or any other ground facility offered in connection with aircraft operations at an airport;

(c) for ground safety services at an airport;

(d) for ground handling services relating to aircraft, passengers and cargo at an airport;

(e) for the cargo facility at an airport;

(f) for supplying fuel to the aircraft at an airport; and

(g) for a stake-holder at an airport, for which the charges, in the opinion of the Central Government for the reasons to be recorded in writing, may be determined by the Authority.

4.4 The White Paper had highlighted that tariffs would need to be determined for the above mentioned aeronautical services in terms of the actual service provider (who may / may not be the airport operator).

4.5 The table below presents the details regarding the provision of the above services at major Indian airports.

Exhibit 1: Provision of Aeronautical Services (under the Act) at major airports

Sl. No.	Aeronautical Service	Service Providers at major Indian airports
1	Navigation, surveillance and supportive communication thereto for air traffic management	Airports Authority of India
2	• Landing, housing or parking of an aircraft • Other ground facility offered in connection with aircraft operations at an airport • Ground safety services at an airport	Airport Operators
3	Ground handling services relating to aircraft, passengers and cargo at an airport	A number of entities including independent concessionaires
4	Cargo facility at an airport	Airport operators / airlines / concessionaires
5	Supplying fuel to the aircraft at an airport	Airport / fuel farm operator

4.6 In view of the above, with respect to the scope of its regulatory oversight, the Authority has considered and developed its regulatory approach and framework for economic regulation of aeronautical services under five categories:

(a) Airport Operators providing various attendant aeronautical services;

(b) Air Navigation Service provider facilitating navigation, surveillance and supportive communication thereto for air traffic management;

(c) Cargo Facility Operators;

(d) Ground Handling Operators; and

(e) Fuel Farm Operators / Fuel Access Providers.

B. Form of Regulation

4.7 The prime rationales for economic regulation of aeronautical services in respect of major airports as envisaged in the Statement of Objects and Reasons accompanying the (AERA) Bill have been mentioned earlier.

4.8 Internationally, explicit regulation of airport / aeronautical services has usually come about when airports have been privatised, or corporatised.

4.9 The effects of regulation, or lack of it, could depend on how the airport operators / aeronautical service providers are generally incentivised to respond to the regulatory framework. Such incentives could, in turn, be linked to the entities' institutional and governance frameworks.

4.10 For instance, a private airport operator / aeronautical service provider, like any other private firm, can be expected to strive to maximize economic gain / profits. The objectives and behaviour of government owned airports / aeronautical service providers could be more difficult to characterise, purely on the principle of profit maximisation. Also, where the government owns and operates a network of airports, these are usually run as a system rather than as individual profit or cost entities. Hence inter-se comparisons of individual airports regarding efficiency and performance could be more challenging for such a system.

4.11 The White Paper discussed the common forms of regulation that have been generally adopted across sectors and regulatory jurisdictions, viz. Price Cap Regulation, Rate of Return Regulation, and Light Touch Regulation.

4.12 In determining tariffs for aeronautical services, Price Cap Regulation would prescribe a ceiling on the aeronautical charges so as not to exceed the prescribed Price Cap. Such a Price Cap would be determined based on expected changes in business parameters pertaining to investments, depreciation, operating costs, anticipated efficiency improvements, a fair rate of return on net investments made by airport operators and growth in volumes. The Price Cap can be typically operationalised in terms of an aggregate measure of remuneration for the Airports Operators, like yield per passenger. Under such an aggregate measure, the airport operators would be required to propose specific tariffs which will be considered and approved by the Authority based on considerations like cost-relatedness, etc. This form of regulation has evolved over a period to account for incentives for investing and for service performance in addition to incentives for incremental improvements in operating performance.

4.13 Rate of Return Regulation permits the regulated entity to set prices at such a level that it recovers its costs, including a rate of return, on an appropriately defined value of capital employed.

4.14 Under Light Touch Regulation, regulated firms are generally required to provide information on prices, costs and profits, but there is no direct regulatory control over prices charged or revenues or profits earned. The monitoring relies on more indirect constraint on firms' pricing decisions with better information, publicity, and the threat of stricter forms of price regulation being introduced.

4.15 The White Paper had compared various attendant features of these forms of regulation and had also profiled international practices in airport regulation in this context.

Submissions in response to the White Paper

4.16 Submissions in response to the White Paper relating to the issue of form of regulation for airports generally supported the introduction of incentive based (Price Cap) regulation. Such submission included those from CII, Air India Charters, IATA, FIA, ACI, and Kenan Institute of Private Enterprise. The Planning Commission also favoured price cap regulation.

4.17 There was general support from airport operators including CIAL, DIAL GHIAL, and Fraport AG for Light Touch Regulation. APAO did not forward a specific suggestion on any particular form of regulation, but noted that the form of regulation should:

- be flexible and able to cope with investment within control period; and
- must not result in cash flow mismatches.

4.18 In its submission, IIM, Ahmedabad 'philosophically' supported light touch approaches to economic regulation, but recognised that the sector was possibly not mature enough to implement such approaches and recommended that price caps should be set. AAI supported Rate of Return Regulation to support Government of India policies on creation of world class airport infrastructure.

The Authority's Assessment

4.19 In formulating its approach to the form of economic regulation of various aeronautical services, the Authority is minded to be guided by paragraph 20 of ICAO's Policies on Charges for Airports and Air Navigation Services which recommends that:

"*States should select the appropriate form of economic oversight according to their specific circumstances, while keeping regulatory interventions at a minimum and as required. When deciding on an appropriate form of economic oversight, the degree of competition, the costs and benefits related to alternative forms of oversight, as well as the legal, institutional and governance frameworks should be taken into consideration.*"

4.20 The above recommendation on selection of an appropriate form of economic oversight has formed the starting point for developing the Authority's regulatory approach to economic regulation of aeronautical services under the five categories mentioned above. Inherent in the above recommendation are certain key factors / issues such as:

(a) Level of commercial or competitive constraint on the service;

(b) Ownership structure impacting the response to incentives;

(c) Impact on factors promoting economic efficiency like capital investment, cost efficiency and service quality; and

(d) Impact of other non-economic factors like safety and security issues of service delivery.

4.21 The Authority's regulatory approach including, inter alia, the form of regulation for each of these categories is enunciated in the following parts of this Consultation Paper.

Part II - Regulatory Philosophy and Approach in Economic Regulation of Airport Operators

1. FORM OF REGULATION

1.1 Assessment of an appropriate form of regulation for airports services needs to be informed by the following factors:

(a) Extent of competition;

(b) Difference in Ownership and Management and their impact if any; and

(c) International Practices.

Extent of Competition between Airports

1.2 The absence of competition from other airports in the same catchment area results in market power for an airport.

1.3 The Greenfield Airports Policy of the Government of India, presently, requires that the DGCA keeps the following conditions in view while granting a license to operate a greenfield airport:

(a) "No greenfield airport would be allowed within an aerial distance of 150 Km of an existing civilian airport;

(b) In case a greenfield airport is proposed to be set up within 150 Km of an existing civilian airport, the impact on the existing airport would be examined. Such cases would be decided by the Government on a case to case basis."

1.4 Above policy provisions coupled with the fact that, as of now, the twelve major airports under the purview of the Authority, do not have competing airports in their catchment areas, essentially indicates a lack of commercial or competitive constraint on the provisions of airport services.

1.5 In future, competition can potentially emerge between existing major airports and new Greenfield airports developed in the catchment areas of major airports as could be the case, for instance, with the proposed Navi Mumbai airport. However, till such time, airport services would tend to essentially be local monopolies.

1.6 In future, competition can also potentially arise between existing major airports with them vying for hub traffic mainly for international services. However, presently, the share of such traffic continues to be small at Indian airports.

1.7 In view of the above, presently, the major airports in India are likely to be in a position to be able to exert market power.

Differences in Ownership and Management

1.8 Presently, the ownership and management structures for the twelve major airports are varied with:

(a) 2 airports being leased airports of AAI under Public Private Partnership (PPP) management,

(b) 3 airports being private airports (with 2 under concession agreements),

(c) 5 airports being airports under the Airports Authority of India, and

(d) 2 airports being Civil Enclaves at defence airfields, managed and operated by the Airports Authority of India.

1.9 In view of the above, an important issue which arises for consideration is whether potential economic gain (profit) (under incentive based regulatory regimes) could have inherent incentive for management behaviour at government owned / managed airports.

1.10 The Authority considers that even government owned / managed airports with well functioning internal governance frameworks could potentially strive to take advantage of commercial opportunities. International experience also indicates that incentive regulation can be applied to publicly owned enterprises. In such cases incentive regulation could also make performance issues more transparent, encouraging management to improve performance. The Authority also notes that, in the Indian context, in terms of Section 11 of the Airports Authority of India Act, 1994, the AAI, in discharge of its functions is required to act on business principles.

1.11 The Authority considers it appropriate to adopt an incentive based approach to regulation in view of its objectives under the Act and the discussion above.

1.12 The White Paper highlighted 2 such approaches, Price Cap Regulation and Light Touch Regulation.

International Practices

1.13 It is commonly argued that Price Cap Regulation is superior to Rate of Return Regulation where profit motives can be harnessed and that Light Touch Regulation, if it can be made to work, could be superior to Price Cap Regulation.

1.14 The applicability of Light Touch Regulation could depend on the prospects for users and service providers being able to handle market uncertainties and reaching mutually acceptable agreements. Where conditions for effective

Light Touch Regulation do not exist, Price Cap Regulation would appear to be the default option.

1.15 A light handed approach to price regulation will rely, mainly, on the negotiations between airport operators and users to consider all service and cost factors while determining the level of airport charges. Although such a regime may be the closest alternative to a fair market mechanism, it relies heavily on the balanced bargaining power of airports and its users which may does not appear to be the case in the Indian context. The light handed approach will also rely on an explicit threat of regulation in case the negotiation between airports and its users fail. Such a threat may lack credibility in the Indian context with no previous history of airport regulation.

The Authority's Assessment

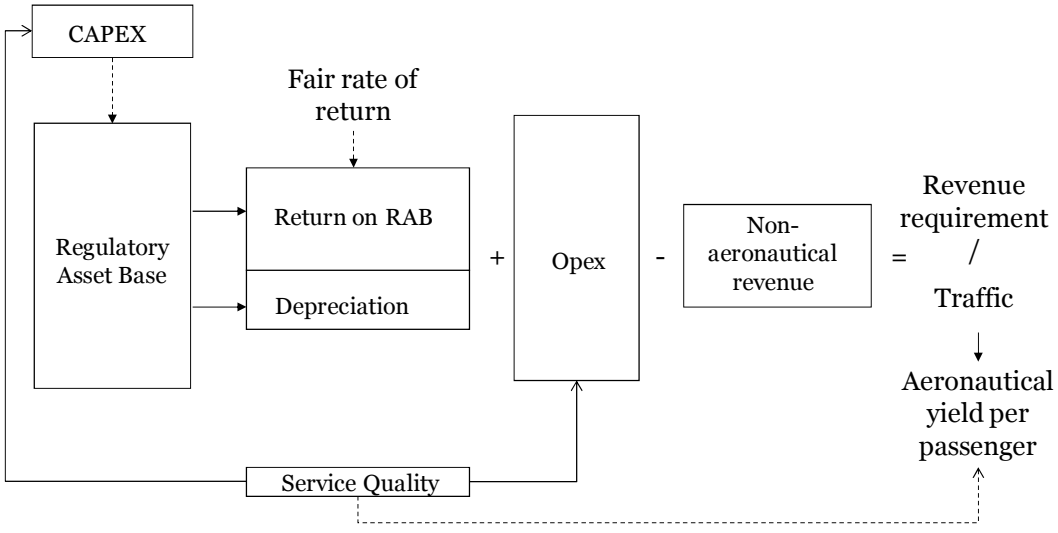
1.16 In view of the relevant facts and considerations and taking into account submissions received in response to the White Paper, the Authority proposes the adoption of an incentive based regulation in the form of Price Cap Regulation.

1.17 The Authority recognises that Price Cap Regulation encourages efficient management by allowing airport operators to retain out-performance profits for a given regulatory period and is minded to ensure that such profits are not made by airport operators at the expense of reasonable interests of users.

1.18 Accordingly, the Authority is minded to adopt Price Cap Regulation in conjunction with mechanisms to encourage user consultation, and considering service performance while determining tariffs.

1.19 The framework of Price Cap Regulation would be operationalised through various 'building blocks', as illustrated in the exhibit below.

Exhibit 2: Regulatory Building Blocks



2. REGULATORY TILL DEFINITION

White Paper

2.1 The White Paper set out an overview of the positions, the arguments, the empirical evidence and the experience in relation to single till and dual till approaches to setting aeronautical tariffs. It noted that ICAO policies permit adopting either of the approaches, and that the positions of interested parties, the arguments, the evidence and the regulatory experience are mixed.

2.2 The White Paper highlighted the conclusions reached by the UK Competition Commission in its 2002 reports on the dual till proposals of the CAA and the rationale it set out for rejecting them. The UK experience provides a useful reference point for the Authority's consideration of the advantages and disadvantages of each approach. Recognising that dual till approaches generally imply higher levels of tariffs for airport users, it is important that the Authority takes a reasonably prudent approach in considering the reasons for rejecting the single till option before it can conclude that a dual till approach is appropriate.

Submissions in Response to the White Paper

2.3 Support for a single till was expressed by IATA, Air India Charters, FIA and Blue Dart. Planning Commission also favoured adopting the single till approach as it treats an airport as an integrated business and comes closer to maximizing welfare than dual till approach.

2.4 Support for a dual till was expressed by AAI, FICCI, Delhi Duty Free Services Pvt Ltd, Foundation for Aviation & Sustainable Tourism, Unique (Flughafen Zurich), Delhi Select Services Hospitality Pvt Ltd, ACI, Kenan Institute of Private Enterprise, Centre for Airspace and Law, APAO, Travel Food Services, DIAL, GHIAL, Fraport AG, Devyani and ASSOCHAM.

2.5 Other views expressed include those of the CII, who supported a hybrid till, and IIM Ahmedabad, who supported the inclusion of a "committed non aeronautical income share" in the price cap.

2.6 Overall, numerically, the large majority of respondents expressed support for dual till approaches. Among users, the large majority of respondents expressed support for a single till.

2.7 There was a strong commonality of responses from DIAL, GHIAL, Kenan Institute of Private Enterprise, Centre for Airspace and Law, Foundation for Aviation & Sustainable Tourism, and the Federation of Indian Chambers of Commerce and Industry (FICCI).

2.8 Concerns on the impact of the single till on incentives for non-aeronautical investment and growth were submitted by the Travel FoodServices, FraportAG, Kenan Institute of Private Enterprise, Centre for Airspace and Law, ACI, Delhi Select Services Hospitality Pvt Ltd, Foundation for Aviation & Sustainable Tourism, Delhi Duty Free Services Pvt Ltd, and the Federation of Indian Chambers of Commerce and Industry (FICCI), AAI, and ASSOCHAM.

2.9 Concerns around encouraging aeronautical investment in India's context were also submitted by ACI, APAO, DIAL, GHIAL, Fraport AG, and Travel food services.

The Authority's Analyses

2.10 The Authority has considered the arguments set out in the submissions in response to the White Paper and has concluded that it should generally adopt a single till approach. The Authority will, however, consider the effect of any concession agreements on its approach for affected airports before determining tariffs for the first tariff cycle.

2.11 The following sets out the Authority's rationale with reference to the arguments presented in favour of a dual till approach. As stated in paragraph 2.7, there was a degree of commonality in the arguments presented by parties in favour of a dual till. The substances of these arguments are addressed below.

Single till implies cross subsidy, which should be avoided

2.12 There is a, prime facie, case that applying non-aeronautical revenues to defray aeronautical revenues represents cross-subsidy. Most economists agree with the contention that cross subsidies are better avoided as they distort pricing signals and, thereby, usage patterns that cause an inefficient allocation of resources.

2.13 In the case of airports, however, the question is complicated by the interdependencies between aeronautical and non-aeronautical activities. It can be observed that non-aeronautical activities help support airport services in many cases where airports are in competitive airport markets, where efficient outcomes would normally be expected. The White Paper also highlighted recent economics literature which analyse airports in the context of two-sided markets, suggesting that efficient prices for each side of the market will not so much reflect relative costs but rather the value placed on each side of the platform by participating in the market. The academic analysis, thus, appears to be mixed.

2.14 The arguments that single till regulation distorts pricing signals appear strongest in circumstances where airports are persistently congested, where

demand exceeds a constrained level of capacity and prices are too low to equate demand with supply. This was the circumstance in the UK in relation to Heathrow airport when the Competition Commission considered the issue. In this context, the Stephen Littlechild paper referred to in the White paper[3] presents a powerful case. However, the problem in such circumstances is not cross-subsidy, per-se, but the regulatory constraint of prices. Prices under dual till, while possibly being closer to market-clearing levels, may not have reference to such levels. However, for airports without persistent capacity constraints, the market-clearing problem would not be relevant.

2.15 The Authority is aware that some Indian airports may be subject to physical or other constraints that could become a source of a persistent market-clearing price problem. In such circumstances, the Authority would expect to recognise the seriousness of the issue for its policy position, but it is not clear that it should decide that a dual till is the most appropriate answer.

A dual till reinforces incentives for investment

2.16 A dual till approach does affect incentives. Because when an airport is able to retain any profits on non-aeronautical activities, it has an incentive to pursue any investment opportunity which increases the above-normal level of those profits. The question for a regulator is how would such incentives encourage investment in aeronautical facilities?

2.17 In many cases, investment in aeronautical facilities will encourage or facilitate growth in demand for airport services, which will naturally lead to more passengers using the airport and more demand for the commercial services on offer at the airport. If the consequent revenues are sufficiently high in relation to the associated costs, the incentive would encourage investment in those facilities.

2.18 However, not all aeronautical investments will have the same proportional impact on non-aeronautical activities. The strength of interest that an airport has in developing aeronautical services may therefore become distorted, with a greater focus on investments that lead to or are required for greater volumes and less focus on investments that meet user needs in other respects. This could distort the airport's investment decisions. For example, under a dual till, aeronautical investments that help speed up the flow of passengers through the airport might be strongly desirable from a passenger perspective, but undesirable for the company if it means passengers spend less time waiting in retail areas.

[3] Stephen Littlechild, 2002, 'Competition Commission: BAA London Airports Inquiry', IEA Discussion Paper

2.19 Under a single till, an appropriately set cost of capital should provide a measured incentive in favour of investment generally. Reinforcing this general incentive, the Authority's positions in this paper in relation to the consultation protocol and incentive mechanisms around service performance should ensure that investment incentives are well targeted towards user needs, including the need for timely investment. It should also help minimise tension between the interests of the airport and of users in the consultative relationship.

2.20 Under a single till, the Authority should be able to reinforce incentives for investment (e.g. by adjusting the allowance for the cost of capital), and target incentives, to what it considers to be the optimum extent. The Authority considers there would be no need for, and user interests would not be served by, any further reinforcement.

Dual till provides finance which make new facilities easier to fund

2.21 The dual till does not, by itself, provide finance. The respondents' argument is equivalent to saying that it is easier to fund new facilities if the company developing those new facilities is more profitable, or will become more profitable when those facilities are built. Of course, phrased this way, the argument would appear to have some merit.

2.22 However, through its cost of capital assessment, the Authority is able to determine the most appropriate level of profitability that balances the company's need for finance and the imposition of tariff increases on users. A dual till may make new facilities even easier to fund, but the balance would then diverge from the most appropriate level. This point is also addressed from paragraph 2.16.

2.23 If finance is genuinely difficult to obtain, that fact would inform the Authority's assessment of the cost of capital or its attitude, on behalf of users, to the issue of pre-funding.

Dual till avoids inefficient allocation of resources as a result of under pricing

2.24 The main argument in relation to under pricing arises when demand persistently exceeds a constrained level of capacity and, because of regulatory constraint, prices are too low to equate demand with supply. That circumstance does not appear to be immediately relevant in India, although it could become relevant in the future (see paragraph 2.15).

2.25 A single till would also lead to an inefficient allocation of resources if the efficient price were a dual till price. However, as explained from paragraph 2.12, the existence of interdependencies between aeronautical and non-

aeronautical activities mean that it is not at all clear that a dual till price would be more efficient. It may actually be less efficient.

Dual till promotes prices closer to the long run marginal costs when capacity is limited

2.26 There are respectable LRMC economic arguments for higher prices as demand reaches capacity limits and consequently lower prices when new capacity is built and there is spare capacity. This is a matter that may be relevant to the method of depreciation and whether more back-end loaded depreciation profiles might be economically more efficient. LRMC does not provide an argument for higher rates of return over the lifetime of a facility and is, thus, not an argument for the dual till.

Dual till encourages the development of non-aeronautical income

2.27 This is likely to be true.

2.28 However, the inherent price cap incentives under the single till also encourage the development of non-aeronautical revenues, both in the investment programme and in ongoing airport management.

2.29 In the investment programme, the collaborative approach to airport development prescribed by ICAO policies and reflected in the consultation protocol (section 5 of Part II), together with an appropriate assessment of the fair rate of return, should give due weight to the development of non-aeronautical income in airport facilities. Where the Authority considers that assets are outside the scope of the RAB, in the circumstances outlined in paragraph 4.15, the company would be free to develop the commercial potential in those assets.

2.30 In relation to ongoing airport management, a single till price cap provides incentives for the airport to outperform regulatory estimates for non-aeronautical revenues as the airport would retain the additional profits until tariffs are next set.

2.31 These incentives are in balance with other incentives, e.g. incentives to make savings in operating expenditure. If it were desirable to strengthen incentives for non-aeronautical income, it would seem also desirable to strengthen other incentives under the single till. It is open to the Authority to strengthen incentives, for example by adopting rolling incentive mechanisms, but there is little evidence in regulated sectors that regulated businesses do not respond to the incentives inherent in 5-year price cap arrangements. For example, the successful development of BAA's non-aeronautical business in the UK after its privatisation was incentivised under a single till arrangement.

Dual till avoids very low charges inhibiting competitive airports

2.32 If competition from competing airports is a realistic prospect at any airport, there could be an argument either for deregulating that airport completely or permitting that airport to increase its charges up to another limit. Depending on how strong the pro-competition policy objective is, that limit may coincide with a dual till level, or it could be higher or lower. However, by itself, it is not a strong argument for the dual till.

2.33 It is worth noting that new entrants to the relevant airport market would be attracted by the prospect of returns without distinguishing between aeronautical and non-aeronautical activities – a new entrant will not be making decisions based solely on whether aeronautical revenues will be sufficient to cover aeronautical costs. In other words, new entrants will be competing on a single till basis.

Single till would aggravate problem of revenue share payments

2.34 The Authority recognises that there may be important issues in relation to revenue share payments to AAI, and to a lesser extent to GoI, at concession airports. It is not clear to the Authority that merely by adopting a dual till approach these issues will be resolved. As stated in paragraph 2.10, the Authority will consider the effect of concession agreements on its approach for affected airports before determining tariffs for the first tariff cycle.

A change in till basis would be seen as a major act of bad faith, undermine credibility of PPP process, lead to perception of sovereign risk and deter future infrastructure investment

2.35 The Authority will consider the effect of concession agreements on its approach for affected airports before determining tariffs for the first tariff cycle. The Authority does not anticipate adopting a single till approach without addressing attendant issues to ensure that the outcome is consistent with its Regulatory Objectives.

ICAO does not prohibit dual till

2.36 This is true, but neither does it prohibit the single till. The White Paper highlighted the relevant ICAO policy positions.

Dual till allocations are not problematic, as suggested by the UK Competition Commission, and the Competition Commission have not attempted to make such allocation

2.37 In reaching its conclusions on the dual till, the Competition Commission had the benefit of extensive reports by CAA consultants on the methodological, process and evidential issues involved in making objective dual till allocations.

2.38 The Authority recognises that it is easy to determine an accounting basis for allocating costs and assets, but it is rather more difficult to demonstrate that such a basis reflects the underlying economics of the activities involved. The approach developed by the CAA relied on significant work involved in developing cost allocation methodologies, reporting and auditing processes and the adoption by the airports of activity based cost accounting systems. In order to provide appropriate protection to users, the Authority agrees with the CAA that it would be necessary to ensure a reasonably robust accounting boundary between aeronautical and non-aeronautical activities.

2.39 Were the Authority to adopt a dual till approach, it would need to consider undertaking the sort of due diligence over the accounting boundaries, in terms of methodologies, accounting systems and auditing processes that the CAA thought appropriate in the UK. It is not clear, in the Indian context, how straightforward this would be.

There is noted opposition of UK and Australian regulators to single till

2.40 The Authority is aware of the positions of UK and Australian regulators. In the UK, responsibility for regulation of airports was shared between the CAA and the Competition Commission. The CAA proposed a shift from its traditional single till approach to dual till for its airports reviews concluded in 2003, but the Competition Commission rejected the CAA's proposals. The CAA has not supported a dual till policy since 2003. The UK experience has been discussed in detail in paragraph 4.86 of the White Paper.

Empirical evidence in major markets have favoured suitability of the dual till

2.41 From a broad review of the literature, the empirical evidence appears to be inconclusive. In any event, the effect of regulation is driven by more than till definitions and other targeted incentive features of the regime are liable to be highly important. The Authority considers that a single till environment provides a firmer foundation for targeted incentives and the constructive relationship between users and each airport that will best serve the interests of those users.

The Authority's Assessment

2.42 The Authority acknowledges that the arguments for a dual till approach are not trivial. The arguments for the dual till and for the single till have been well documented over a number of years, but the Authority can see that there is no clear consensus on the evidence or the principles.

2.43 The Authority considers that the balance of the evidence relevant to the Indian situation points towards Single Till being the most appropriate basis in general for the regulatory regime for major airports in India. In taking this view, the Authority has been mainly influenced by the following:

(a) Non-aeronautical revenue is clearly a function of aeronautical activity at an airport. Therefore, there is a persuasive case for non-aeronautical revenues to be taken into consideration for fixation of aeronautical tariffs.

(b) A Single Till approach protects interests of users by ensuring service provision commensurate with the respective tariff / charges.

(c) Single till approach takes all airport assets and costs into account thus avoiding complications relating to cost allocations etc. inherent under a dual till approach

2.44 With reference to the considerations the Authority set out in paragraph 4.94 of the White Paper for its approach at each airport:

- The presence or otherwise of capacity constraints that are outside the control of the airport – this is potentially an issue considered in paragraph 2.15.
- Requirement for giving incentives for foreseeable investments at airports – this is addressed in paragraph 2.19.
- The extent of and scope for the airport to develop the commercial opportunities at the airport – this is addressed from paragraph 2.27.
- The scope for the airport to raise non-aeronautical charges for services that are not subject to competition or other commercial constraint – the Authority has addressed these issues in the design of the price control and the compliance statement procedures outlined in section 11 below.
- The priorities and expressed views of users at the airport – the Authority considers this would be a factor that would be relevant if it were considered generally appropriate to adopt a dual till.
- The basis of setting charges envisaged in terms of any concession agreement covering the airport – the Authority will consider the effect of

concession agreements on its approach for affected airports before determining tariffs for the first tariff cycle.

- The extent to which the airport has adopted or can adopt best practice cost allocation systems for reporting and forecasting airport – the Authority considers this would be a factor that would only be relevant if it were considered generally appropriate to adopt a dual till.

3. FAIR RATE OF RETURN

3.1 A key component of the regulatory building blocks is determining the fair rate of return investors can earn on their capital investments in airport facilities, as represented by the regulatory asset base. A fair rate of return can be determined by assessing the so called cost of capital for an investor. However, as noted in the White Paper, as with any commercial investment, such a rate of return may have reference to the level of performance. As highlighted in the consultation responses by DIAL and GHIAL, in light of good performance by the airport operator, this could exceed that rate of return set by the Authority. Or in the case of poor performance, returns could be below the fair rate of return.

Submissions in response to the White Paper

3.2 The Authority received 12 comments on the White Paper in respect of a fair rate of return. Fraport AG highlighted importance of a fair rate of return in determining both internal and foreign investments into the sector.

3.3 DIAL and GHIAL noted several points highlighting:

- That at the time of investment there was regulatory risk as the approach to tariff setting was unknown;
- That airports are distinct from other utilities with 'significantly higher risks';
- They do not support use of normative gearing ratios and request flexibility in determining gearing levels.

3.4 APAO stated that "level of performance cannot have any bearing on the cost of capital of an airport. It is best measured via penalty / incentive mechanism for efficient operations and service quality considerations". APAO also noted that "rate of return should be based on sound economic principles, and on past actual evidence of cost of investment on similar projects under the same economic conditions". In addition, APAO also noted the presence of regulatory risks at the time of investment. In terms of the calculation of a weighted average cost of capital, APAO stated that:

"The current capital structure of airports reflects the financing available to airport operators in recent years and may not reflect the desire of airport operators, and is influenced by the revenue share."

3.5 APAO also noted the use in other regulated sectors of risk frameworks where risks are classified by the degree of control held by the operator in controlling the risk, with different models being applied for adjusting the risk depending

on the ownership of the risk. In the context of airports, APAO identified the following as the key sources of risk:

- Traffic variations
- Variation in the cost of capital
- Capital expenditure inflation
- Operating expenditure inflation
- Volatility in non-aero revenues
- Unanticipated interruptions in airport operations

3.6 It is also noted that the development of non-aeronautical revenues is regarded as a riskier proposition than aeronautical revenues, as it frequently relies on discretionary consumer spending.

3.7 Similar views on the fair rate of return were also expressed by CII, AAI, FICCI, FAST, Kenan Institute of private enterprise. However, Air India Charters, expressed support for a normative gearing ratio to be applied to the cost of capital estimates. IATA expressly noted that the cost of capital "needs to be established independently and transparently to ensure that the figure is fair and stands up to scrutiny".

3.8 Planning Commission noted that the "investments in airports are lumpy and as such the fair rate of return should be considered while setting tariff for airport services. This would not only attract funds for investment in airport services but also help in improving safety and quality of services. Subject to the safeguards to protect users, the regulator should protect the investors from key aspects of risks by reviewing the airport and aeronautical services tariff periodically. While determining the tariff rates the investments made to improve quality of service, improve safety and enhance reliability etc. may also be considered."

A. Weighted Average Cost of Capital

3.9 In simple terms, the cost of capital represents the level of return investors require to make investments viable. Given the available sources of finance the cost of capital, generally, represents a combination of:

- The interest paid on debt in the form of banks loans, bonds and other lending mechanisms; and

- An expectation of a return on equity, invested in the business, to investors in return for an expectation of dividend payments and an expectation of an increase in the value of the shares.

3.10 Determining the cost of debt to the firm is generally straight forward and can be proxied by the rate of interest payable on its debt. Whilst the cost of debt can normally be observed through the rate of interest, there is no such clear proxy for the cost of equity, which requires estimation. As noted above, returns to equity investors are a combination of dividends and capital growth of the value of shares. There is an important distinction between cost of equity and cost of debt, in that the firm is not contractually obliged to pay a dividend and cannot guarantee capital growth, compared to debt holders where payments of interest and principal are contractual obligations, with clear provisions for default. Due to the additional risk faced, equity investors will expect a higher expected rate of return compared to debt holders. It also holds that the more risky the equity investment the higher the compensation required by equity investors.

3.11 In the context of major airports it is important to understand the risks they face and the impact they will have on their cost of capital.

3.12 The combination of the cost of equity and the cost of debt in commonly referred to as the weighted average cost of capital (WACC) and is defined as:

$$WACC = g \text{ x } R_d + (1 - g) \text{ x } R_e$$

Where:

g is gearing (i.e. debt / debt + equity)

R_d is the cost of debt

R_e is the cost of equity

3.13 There are two further adjustments that are commonly applied to the cost of capital for taxation and inflation.

Treatment of Taxation

3.14 In addition to covering expenses and a return on capital, regulators also take account of investors' expectation that their returns would be net of tax. There are two approaches in this regard:

(a) Post-tax forms of the WACC assume that company taxes are treated as a cost separate to the cost of capital; while

(b) Pre-tax forms of WACC account for the cost of taxation directly in the WACC estimate and hence company tax liabilities are included in the return on capital.

3.15 It is important to note that these two approaches can be made equivalent by using the effective rate of tax in the post-tax WACC.

3.16 Further details on the relationship between taxation and the cost of capital are provided at Appendix 3.

Treatment of Inflation

3.17 In setting the fair rate of return, the Authority will need to take into account inflation, either through the (nominal) cost of capital or through the valuation (indexation) of RAB.

Approaches in other Indian / international sectors to taxation and inflation

3.18 Internationally, regulators have generally taken two approaches to accounting for inflation in the cost of capital. The first approach is to compensate for inflation by indexing the regulated asset base on which returns are allowed and to apply an estimate of the real cost of capital. The second approach is to include inflation expectations into the nominal cost of capital calculation, with no inflation adjustment applied to the regulatory asset base. Of the two approaches the first approach has been commonly used by UK and Irish aviation regulators and the second by the South African Regulating Committee to ACSA and ATNS. However, it is important to note that in the long-run both approaches should give the same present value result.

3.19 There are a range of approaches used by other regulators internationally and domestically, depending on the particular taxation regime. In the UK, CAA use a real pre-tax cost of capital. However, the majority of other UK regulators use real post-tax measures of cost of capital, with inflation adjustments applied to the RAB.

3.20 In India, the Tariff Authority for Major Ports (TAMP) uses a nominal pre-tax cost of capital in its calculation. In the electricity sector the general approach has been to use a nominal post-tax rate of return, with any taxes being treated as an expenditure item.

The Authority's Approach to Taxation and Inflation

3.21 It is worth noting that the state support agreements for DIAL and MIAL specify that the WACC should be the nominal post-tax weighted average cost of capital. The Authority proposes to follow this approach as a general

framework. This is also consistent with the regulatory precedent in other sectors and ensures a consistent approach to cost of capital. To estimate the nominal post-tax cost of capital the Authority will need to consider the appropriate assumptions to apply for inflation and the modelling of corporation tax.

B. Cost of Equity

3.22 As discussed above, the cost of equity cannot be observed directly and needs to be estimated. There are a number of alternative approaches to estimating the cost of equity, with the most commonly used being the Capital Asset Pricing Model (CAPM). There are also several alternative methodologies to CAPM, which are discussed in Appendix 4. A detailed assessment of the different components of the cost of equity using the CAPM approach is presented at Appendix 5.

Capital Asset Pricing Model

3.23 The CAPM is frequently used by regulators and assumes that investors require their investment to at least yield a return available in 'risk free' assets plus a premium for the risk involved in an equity investment. This premium is equal to the general equity market risk premium (i.e. the general return for holding riskier equities) multiplied by the equity beta for a particular investment, which measures the risk of a particular investment relative to the average equity investment. For example, with an equity beta of one, investors will expect returns inline with the market. An equity beta greater than one, indicates that there are greater systematic risks associated with the investment and therefore greater expectations of equity returns are required by investors. The CAPM can be defined as:

$$R_e = R_f + \beta_e \text{ x } EMRP$$

Where:

R_e is the cost of equity

R_f is the risk free rate

β_e is the equity beta

EMRP is the equity risk premium ($R_m - R_f$) where R_m is the equity market return

3.24 Using the different components of CAPM it is possible to provide an illustrative calculation for the cost of equity, with different equity betas.

Exhibit 3: Illustrative Cost of Equity Calculation

CAPM component				
Risk free rate	7.5%	7.5%	7.5%	7.5%
Equity market risk premium	10%	10%	10%	10%
Equity Beta	0.4	0.6	0.8	1
Gearing	50%	50%	50%	50%
Cost of equity	11.9%	14.1%	16.3%	18.5%

Approach by international regulators to estimating cost of equity

3.25 The approach by international regulators is generally to use the CAPM model for estimating the cost of equity. In particular the UK CAA, the Irish Commission for Aviation and the South African Regulating Committee to ACSA and ATNS make use of the CAPM to estimate the cost of equity for regulated airports. Prior to the introduction of price monitoring, the ACCC also applied CAPM to estimate the cost of equity.

Approach by India regulators to estimating cost of equity

3.26 Both ports and electricity sector regulators use differing approaches for considering cost of equity.

3.27 In the electricity sector, the Tariff Policy of the Central Government notes the following on the issue of Return on Investment:

"*Balance needs to be maintained between the interests of consumers and the need for investments while laying down rate of return. Return should attract investments at par with, if not in preference to, other sectors so that the electricity sector is able to create adequate capacity. The rate of return should be such that it allows generation of reasonable surplus for growth of the sector.*

The Central Commission would notify, from time to time, the rate of return on equity for generation and transmission projects keeping in view the assessment of overall risk and the prevalent cost of capital which shall be followed by the SERCs also. The rate of return notified by CERC for transmission may be adopted by the State Electricity Regulatory Commissions (SERCs) for distribution with appropriate modification taking into view the higher risks involved. For uniform approach in this matter, it

would be desirable to arrive at a consensus through the Forum of Regulators."

3.28 The Forum of Regulators in their status report on "Issues pertaining to Tariff Policy" (2007-08) note that various state electricity regulatory commissions have approved return on equity in the range of 14-16% with higher returns being approved for distribution entities as compared to generation and transmission entities.

3.29 It may be mentioned here that the Central Electricity Regulatory Commission had commissioned a study over 1999-2000 which also attempted to estimate cost of equity using the Capital Asset Pricing Model (CAPM). However, finally the Commission did not feel confident in adopting the CAPM and the resultant cost of equity as indicated by the model and concluded in its order dated 21st December, 2000 that – "As such, present ROE of 16 % is advisable to be retained for the next tariff period as well."

3.30 More recently, vide Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (specified from 1.4.2009 for a period of 5 years), CERC has proposed return on equity to be considered as follows:

"15. Return on Equity. (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% to be grossed up as per clause (3) of this regulation[4]:

Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in Appendix-II"

3.31 In the ports sector, TAMP allows return on capital employed fixed in accordance with CAPM. In clauses 2.9.1 and 2.9.2 of its revised guidelines for tariff fixation of March 2005, TAMP notes as follows:

"2.9.1. *Return will be allowed on Capital Employed (ROCE), both for Major Port Trusts and Private Terminal Operators, at the same pre-tax rate, fixed in accordance with the Capital Asset Pricing Model (CAPM). …"*

2.9.2. The rate so fixed, presently 15% per annum, will be reviewed and revised if necessary, at the beginning of the financial year, i.e. in April every

[4] Clause (3) of the regulation provides for rate of return on equity to be computed by grossing up the base rate with the normal tax rate for the year 2008-09 applicable to the concerned generating company or the transmission licensee, as the case may be

year, in the light of changes in the key parameters. If the resultant variance is less than 1%, the existing rate will continue unaltered."

3.32 Recently, in their notification dated 30 June 2009, TAMP notes as follows:

"*Clause 2.9.2. of the tariff guidelines of March 2005 requires this Authority to review the rate of ROCE in April every year, in the light of the changes in the key parameters. Accordingly, a review of the existing rate of ROCE was undertaken which revealed that the variance is less than 1%.*

Since the variance is less than 1%, the existing maximum ROCE of 16%[5] will continue to be applied in all tariff cases of major ports and private terminals, to be decided in the financial year 2009-10."

3.33 In its guidelines for upfront tariff setting for PPP Projects at Major Port Trusts of February 2008, TAMP has provided for allowing return on capital employed as follows:

"*3.7.1. A fair return on capital employed will be allowed on the capital cost determined in terms of clause 3.4.1. The norm for determining the quantum of Return on Capital Employed is 16% as of now.*"

3.34 It might be worthwhile to note here the references to acceptable return on equity for highway projects as per recommendations of the BK Chaturvedi Committee (constituted by the Prime Minister on 8th August 2009) on National Highway Development Program (NHDP) as accepted by the Central Government:

"*Before implementing a project on EPC basis, it will be compulsorily tested for BOT (Annuity) and only if unacceptable bids are received then only the project will be awarded on EPC basis. Normally, an annuity bid working out to an Equity IRR of up to 18% will be acceptable as per these norms. However, in the event of bids exceeding the Equity IRR of 18 %, the same will be bid out on EPC. In case of difficult areas having law & order problems, security, inhospitable terrain, etc., a bid working out to an Equity IRR of up to 21% will be acceptable considering the risk premium of 3%, on case to case basis.*"

The Authority's approach to estimating Cost of Equity

3.35 The Authority recognises that the assessment of the cost of equity will be highly material to the Authority's reviews of airport charges. The Authority

[5] A ROCE of 16% implies a Cost of Equity of 20%, on the basis of a 50% gearing ratio and Cost of Debt of 12%.

considers that the CAPM is the most appropriate approach for determining the cost of equity. However, the CAPM approach will potentially result in a wide range of results, depending on assumptions made around different components of CAPM, as demonstrated in Exhibit 3. Where the range of results derived from CAPM is considerable, the Authority will consider the application, where appropriate, of benchmarks for the cost of equity, most notably from other regulatory estimates, but recognising the differences in risk profiles between sectors. In estimating the cost of equity the Authority will also take account of:

- the issues reported in regulatory consultation papers, responses to those papers and decision papers supporting those decisions;
- differences in the structure or operation of the respective regulatory regimes compared with that operated by the Authority;
- any differences in the commercial environments of the respective airports compared with those in India;
- decisions relating to cost of equity assessments made by other regulators in India and comparable jurisdictions;
- other aspects of the overall regulatory regime (e.g. forecasting error correction term etc.);
- any other relevant academic or other studies and, in particular;
- responses to the Authority consultation by airports, users and other interested parties.

C. Cost of Debt

3.36 The cost of debt is the other key component in the estimation of the cost of capital. The cost of debt is commonly expressed as the debt premium over the risk free rate in the form:

$$R_d = R_f + DP$$

Where

R_d is the pre-tax cost of debt

R_f is the risk free rate

DP is the corporate debt premium

3.37 The corporate debt premium represents the risk of default faced by investors in providing debt to a particular company. The higher the risk of default the higher the corporate debt margin will be. It is, therefore, important to note that the cost of debt is closely linked to the gearing of the company, which is discussed below.

Issues in estimating the Cost of Debt

3.38 The cost of debt is regarded as more straightforward to estimate than the cost of equity as it is observable and does not need to be inferred from investors' behaviour. There are two commonly used approaches for estimating the debt margin:

- Actual cost of debt: Using information on the borrowings of company it is possible to estimate an overall cost of debt by weighting the difference in sources and rate of borrowing.

- Normative cost of debt: Using an estimate of the level of debt a company could achieve at a given credit rating, by referencing to the bond market.

3.39 Some regulators have effectively sought to combine these approaches by using a normative cost of debt, but by taking into account the actual cost of embedded debt in the firm. This approach reflects the fact that a firm may have previously raised debt at a different rate to that currently observed in debt markets.

Actual Cost of Debt

3.40 The use of the actual cost of debt is a straightforward way to measure the cost of debt for a firm. The general approach is to review the firm's actual cost of debt measured by a weighted average of the debt currently.

3.41 A concern with using the actual cost of debt is that by effectively allowing debt costs to be passed through to users, there may not be sufficient incentives on the firm to actively manage its cost of debt / capital structure. Therefore, the Authority would be required to review the debt financing arrangements to ensure that the process was efficiently managed and raised at market rates.

Normative Cost of Debt

3.42 A normative cost of debt approach looks to estimate the cost of debt with reference to the market, for example using information on traded bonds with a particular credit rating, usually investment grade. An alternative approach would be to take a normative debt premium from the observation of the debt premium paid by comparator companies. The advantage of the normative cost of debt approach is that it provides incentives for the firm to efficiently finance

its operations and does not pass any inefficiency in debt financing to users. The disadvantage with this approach is that it requires a well functioning and liquid bond market to benchmark against or detailed data on debt premiums, which is unlikely to be the case in India, where the bond market is relatively underdeveloped compared to equity markets.[6]

Approach by Indian regulators to estimating Cost of Debt

3.43 The approach for estimating the cost of debt by Indian regulators has been to use both actual and normative approaches. In the electricity sector CERC, while formulating its Terms & Conditions of Tariff Regulations in 2001, decided against the normative approach to the cost of debt for the following reasons:

1. *The then interest cost of some of the Central Sector Undertakings was significantly lesser that even the risk free interest rates. Application of a normative cost of debt would have resulted in significant equity returns for investors (as profit on debt).*

2. *It was difficult to predict a cost of debt for a long time period considering that the corporate debt market was relatively shallow, and the future interest rates were uncertain.*

3.44 In the context of major airports, the above mentioned issues may even now be relevant. The Airports Authority of India could have a low interest cost and the cost of long-term debt may be difficult to predict in the present uncertain economic environment.

3.45 To estimate the cost of debt TAMP have used a normative approach to assessing the debt risk premium based on the risk profile of the port sector as assessed, presently considered at 5.55% as 'investment grade'.

Approach by international regulators to estimating Cost of Debt

3.46 The international approach has been to estimate the cost of debt by assessing the spreads on corporate bonds. In its review of the cost of debt for Stansted Airport, the UK CC used a combination of normative cost of debt and an allowance for BAA's embedded cost of debt, with a 50/50 weight for existing and normative debt. Previously, in its reviews of Heathrow and Gatwick airports, the UK CC used a normative approach benchmarking the debt of BAA to the cost of debt that a company with a BBB+/Baa1 rating could be expected to achieve. This approach is similar to that of other UK regulators. The Irish CAA applies a normative approach and assesses the cost of debt

[6] Report of expert committee on corporate bonds and securitization, December 2005.

applicable for a company with an investment grade rating. The ACCC used a debt premium approach to assess the cost of debt and its 2001 decision on aeronautical charges estimated a 1% debt premium for Sydney airport[7].

The Authority's approach to estimating the Cost of Debt

3.47 In view of the analysis above, the Authority believes that due to difficulties in assessing the debt premium on the basis of robust evidence, it will not be possible to determine a suitable benchmark for an estimation of the normative cost of debt. The Authority also recognises that significant investments have already taken place with significant amounts of debt financing already secured.

3.48 The Authority's approach to estimating the cost of debt will, therefore, be to look at the actual cost of debt faced by major airports, subject to reasonableness of such costs based on review of the sources, procedure and method through which the debt was raised. The cost of such debt will naturally reflect any interest free loan arrangements made pursuant to concession agreements. For future debt to be raised over the review period, the Authority may use company projections on the future cost of debt, to be supported by detailed evidence. When the company comes to issue new debt, the Authority may seek to review the process to ensure that the new debt was raised at a reasonable cost.

3.49 With regard to the refinancing of debt, the Authority expects airport operators to make every effort to refinance the loan as long as it results in net benefit to the users. The cost associated with such refinancing shall be borne by the users and any benefit on account of refinancing of loan and interest on loan shall be passed on to the users. Refinancing may also include restructuring of debt.

D. Gearing

3.50 Gearing is the proportion of debt in the capital structure of a company and is normally calculated as the total value of debt as a proportion of the sum of the total value of debt and equity.

3.51 It is also important to recognise that gearing also has a wider impact on the overall cost of capital, as a high level of gearing is likely to increase risk to both equity and debt holder and both will require a high rate of return, but the increased share of the lower cost of debt, should mean that the cost of capital goes down.

[7] Sydney Airports Corporation Limited, Aeronautical Pricing Proposal, Australian Competition and Consumer Commission, May 2001.

Issues associated with gearing

3.52 The gearing calculation is used to provide the weights attributable to the cost of equity and debt in the overall cost of capital. There are two approaches to assessing the level of gearing: actual and optimal capital structure. The first of these takes the regulated company's actual capital structure to assess the level of gearing. The optimal approach requires a regulator to take a view on the optimal gearing of an efficiently financed firm.

Actual capital structure approach

3.53 This approach is straightforward and uses the current capital structure for calculating the cost of capital, based on the current value of the equity and debt. The potential problem with this approach is that the current capital structure may not be representative of the future structure over the control period, for example if the airport is able to increase its debt financing. And whether the overall capital structure is efficient. Therefore, even if the actual current capital structure is to be applied it will be necessary to look at how this might evolve other the review period.

Optimal capital structure approach

3.54 An alternative to taking the actual capital structure is to estimate the optimal capital structure. To assess optimal gearing two approaches have been used by regulators: industry benchmarking and fundamental analysis, although in practice a combination of the two approaches has commonly been employed.

(a) Industry benchmarking looks at the actual capital structure employed within an industry to use as a benchmark. This approach is relatively straightforward and has minimal data requirements. Within the context of Indian airports it may be difficult to draw conclusions on the normative gearing ratio from a sample of only five private airports. An alternative could be to consider benchmarks from other industries or PPP projects. A drawback with this approach is that it assumes that the industry under consideration has achieved an optimal capital structure which may not be the case if there are imperfections in capital markets or other distortions, such as widely differing context between companies.

(b) Fundamental analysis looks at the credit rating a particular company could attain by looking at the level of gearing and its impact on firm value. This can involve financial simulations, but more commonly regulators have sought to estimate the level of gearing that would allow the company to obtain a particular credit rating (normally investment grade), through interactions with credit rating agencies and simulation models of different levels of debt.

Approach by Indian regulators to estimating gearing

3.55 In the power sector, gearing is generally determined on a normative basis, with gearing commonly assumed to be 70%. Under this normative structure, where equity provision is greater than 30%, the balance above 30% is treated as a normative loan. In its regulatory determinations TAMP assumes a normative gearing of 50%, based on the observed structure in the sector.

Approach by International regulators to estimating gearing

3.56 International regulators have used both actual and optimal capital structures in setting the cost of capital, although there has been some movement towards using optimal capital structures as a preferred methodology.

3.57 In its Q4 review the CAA used BAA's actual gearing, however in its Q5 review of Heathrow and Gatwick airports, the CC recommended a move towards an optimal capital structure, in light of recent regulatory precedent in the UK and stakeholder support for an optimal capital structure. The CC used a two step approach:

- Assessing an appropriate credit rating for Heathrow and Gatwick consistent with the characteristics of the business
- Assessing the level of gearing that is likely to be compatible with that rating

3.58 On the first step, the CC concluded that an investment grade rating (Baa1 / BBB+) would be appropriate, to ensure that airports are able to sufficiently access capital markets to fund investment

3.59 To assess the gearing consistent with this rating the CC met with key credit rating agencies to understand the maximum level of gearing that this credit rating could achieve, which was estimated at 70%. The CC concluded that there were potentially significant risks with assuming this level of gearing and that 60% would be more appropriate optimal level of gearing. In its subsequent review of Stansted airport, the CC assumed an optimal gearing of 50% reflecting the higher traffic risk faced by Stansted airport. A 50% normative gearing ratio has also been assumed by the Irish CAR. And a 60% normative gearing structure was assumed by the ACCC for Sydney airport. Hence for airports in developed markets a normative gearing ratio of 50-60% appears to be the norm.

Further issues arising from relatively high levels of gearing

3.60 It is generally recognised that it is often attractive for investors to adopt relatively highly geared capital structures. The implication is that higher levels

of gearing are more efficient, permit a lower actual cost of capital to investors and, other things being equal, create shareholder value.

3.61 The regulatory purpose of adopting gearing assumptions that reflect high levels of actual gearing is to ensure that the impact of high levels of gearing on the cost of capital, namely its reduction, is fairly reflected in the regulator's assessment.

3.62 However, conventional CAPM calculations sometimes lead to a counter-intuitive answer that the WACC increases with gearing. In such circumstances, there is an evident conflict between the CAPM and WACC calculations and the real world factors that drive decisions on capital structures. In such circumstances it may be unsafe to use those calculations to determine a fair rate of return for relatively highly geared structures. An example of this is an issue that affected the 2008 conclusions for the airports reviews for Heathrow and Gatwick. Paragraphs 88-90 of Appendix F of the Competition Commission's October 2007 report on Heathrow and Gatwick airports sets out the issues very clearly.

3.63 The answer to the problem identified by the Competition Commission was to infer that there must be a debt beta component in the debt premium. An alternative approach would be to infer that the cost of capital cannot be any higher than the cost of capital computed for more normal levels of gearing, consistent with equity betas being close to one, and assess the cost of capital on that basis.

3.64 The Authority is minded to cross-check its cost of capital estimates in this way in the event that equity betas are substantially higher than one as a consequence of relatively high levels of gearing.

The Authority's approach to estimating gearing

3.65 Given the differing contexts of Indian airports and the challenges associated with determining an 'optimal level' of gearing, the Authority proposes, for the time being, to use an airport's actual gearing to estimate the cost of capital. The Authority also notes that in the case of concession airports, the capital structure arrived at by private operators may have been impacted by the concession structure.

3.66 The Authority, however, is minded to consider a minimum level of gearing for estimating the cost of capital of future greenfield projects.

3.67 It is also broadly understood that the Airports Authority of India has a relatively low level of gearing. In normal circumstances, the evidence from capital structuring decisions in the commercial sector for infrastructure businesses indicates that a low level of gearing would be considered

inefficient. However, AAI may have adopted policies or may have been subject to specific constraints and expectations in relation to its funding that would be unrelated to financial efficiency in a normal commercial context. The Authority would be minded to presume that AAI's funding structure is reasonably efficient in its own circumstances but that those circumstances may be difficult to interpret in relation to the cost of capital assessment. For example, a lower level of gearing may reflect the relative attraction of equity if there were different expectations of profits from the Government shareholder than private shareholders. The Authority would appropriately consider these factors while assessing fair rate of return in case of AAI with an underlying objective of protecting the reasonable interests of users.

4. REGULATORY ASSET BASE

4.1 The White Paper introduced the concept of the regulatory asset base (RAB) as part of price cap regulation. The RAB follows a clearly defined method of calculation of investments on which the regulator will permit a fair rate of return while determining tariff levels. The White Paper also highlighted the fact that, despite the similarities with conventional accounting, the RAB account does not necessarily correspond to fixed asset registers and financial accounts maintained by the company, based on well laid regulatory principles. Other issues covered in the White Paper included:

- The initial valuation of the RAB
- RAB maintenance basis
- Entry and exit of assets into the RAB

Submissions in response to White Paper

4.2 The responses relating to the RAB gave support to the view that the RAB does not necessarily correspond to the fixed asset registers and financial accounts maintained by the company. The scope of the RAB was also discussed in conjunction with the form of regulation, with support for a dual-till system of regulation implying that the RAB should only contain aeronautical assets. In addition, two specific points were raised on:

- The need for a hypothetical RAB for MIAL and DIAL, as mentioned in their respective State Support Agreements; and
- The consideration of additional provisions in RAB for work in progress and assets in the course of construction.

4.3 The CII also suggested that the initial focus of the Authority's work should be on determining an initial value for the RAB, with a longer-term focus being more detailed work on the valuation of the RAB.

Issues for consideration

4.4 Building on the issues raised in the White Paper and the consultation responses this section addresses the following key issues:

- Scope of RAB: Determining what should be included in the RAB, including the scope of the assets that should be included in the RAB and allowances for working capital.

- Valuation of RAB: Assessing the different approaches to valuing the initial RAB

- Roll forward of RAB between review periods: Determining how the RAB should be adjusted between review periods.

Scope of RAB

4.5 The first issue to consider is the overall scope of the RAB in terms of the assets that are to be included in the RAB. This is closely linked to the debate on the regulatory till which is covered at section 2. Given the Authority's preferred approach for a single till, the key issue would be about assets to be included in the single till.

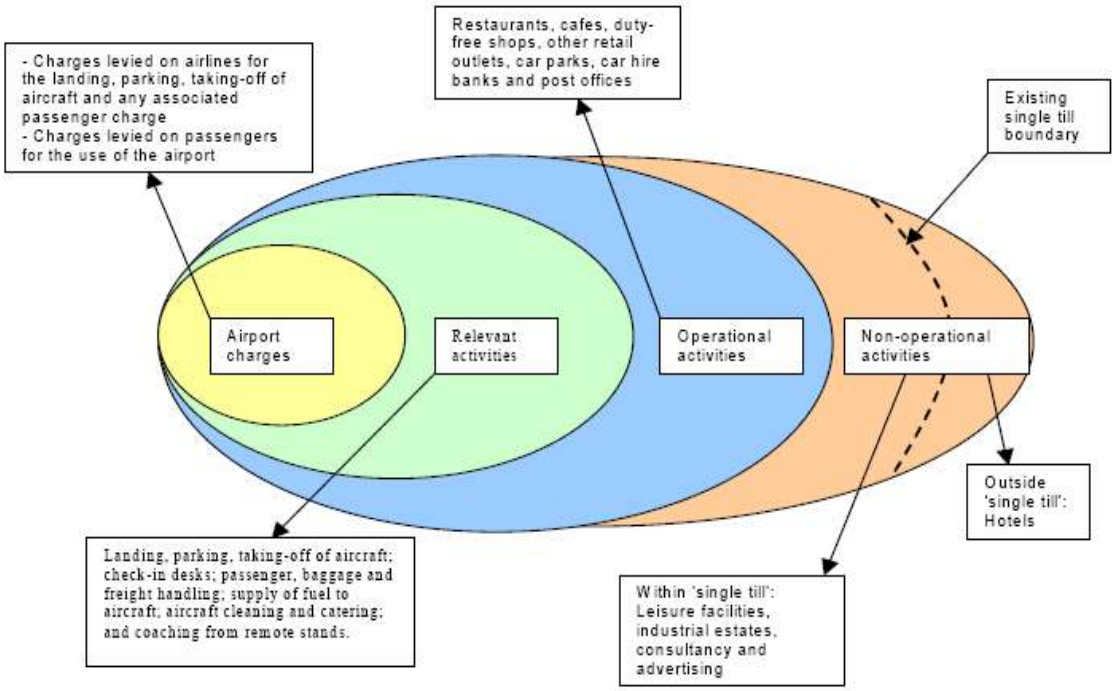
4.6 Taking into account the submissions in response to the White Paper, it is also necessary to consider whether the RAB should make an allowance for Working Capital.

4.7 The Authority has also considered and addressed the issue of Work in Progress (WIP) assets and their inclusion in the RAB in section 5.

International experience

4.8 Internationally, even under single till regulation, the scope of the RAB has been considered, with certain assets excluded outside the boundary of the single till. In its assessment of the scope of the RAB for Manchester airport the CAA summarised the RAB in the diagram below:

Exhibit 4: Summary of CAA approach to setting scope of single till



Source: CAA - based upon the Notes on Clauses from Airports Act 1986

4.9 In the UK, various non-operational activities have been excluded from the single till RAB, such as hotels. The key condition imposed by the CAA was that these assets were ring fenced in a company separate from the airport company, to ensure that clear accounting boundaries were in place.

4.10 The initial RAB for BAA was calculated on the basis of the net book value of fixed assets plus working capital[8]. The level of working capital has remained consistent and has not been adjusted at regulatory reviews.

4.11 In its price determinations for NATS, the UK CAA includes an allowance for working capital on an on-going basis. The measurement of working capital used by the CAA is examined during the course of the tariff review and is subject to change depending on the particular circumstances and working capital requirements of NATS.

[8] In its Q4 assessment of London airports, the UK CC noted that "With regard to working capital, our view is that the Regulatory Capital Value established by the Monopolies and Mergers Committee reflected working capital at that time and that there is no evidence of significant change since then in working capital relevant to the business (stocks and net trade debtors)." The CC's overall conclusion was not to include any change in the level of working capital in the regulatory asset base.

Domestic Experience

4.12 In the ports sector, TAMP use a return on capital employed approach as a proxy for the RAB and define capital employed as:

Net Fixed Assets = Gross block – depreciation – works in progress + working capital

Where working capital is defined as current assets (excluding cash / deposit balance of funds) less current liabilities.

4.13 In terms of the scope of the RAB, TAMP consider the inclusion of "business-related assets / facilities, (like quarters / school / hospital for port employees) which may not be directly used in the business but which have been created for supporting the business". However, where these assets are included in the RAB, they are only allowed to make a return at the risk free rate. TAMP does not allow inclusion of "social obligation assets / facilities not directly or even indirectly related to port operation" in the RAB.

4.14 In the electricity sector, working capital is commonly included in the RAB using a normative approach. For example, DERC give a working capital allowance based on a number of months of operating expenses.

The Authority's assessment on scope of the RAB

4.15 The Authority's position for defining the scope of the RAB is that, in normal course, all airport assets will come under the scope of the single till. However, the Authority could exclude certain assets from the scope of RAB based on due considerations of relevant factors. Such assets could, however, be included in the single till if the airport could demonstrate that the asset is integral to the airport.

4.16 The Authority may need to consider financial ring-fencing arrangements in respect of assets outside the scope of the RAB to protect airport users from any substantial financial risk and financial liability involved in developing those assets.

4.17 The Authority's default position is that working capital would not be included in the RAB and it would only expect to include a provision for working capital in the regulatory asset base, if evidence was presented demonstrating a persistent level of working capital.

Valuation of Initial RAB

4.18 The initial valuation of the RAB is a key step in the tariff setting cycle. A range of approaches have been taken by regulators for assessing the initial value of

the RAB. The Irish Commission for Aviation Regulation, considered various approaches to setting the initial RAB for regulated airports[9], the results of which are summarised at Appendix 6.

International Experience

4.19 International regulators have applied a range of approaches to valuing the initial RAB depending on the circumstances and data availability. In the UK, where industries were privatised, the market value of the privatised company was commonly used to determine the initial RAB (i.e. the fair market value approach). Where market data was not available, a range of other approaches were taken to estimate the initial RAB. In general, the key starting point was to understand the context in which the current capital base was used to determine charges and use this as a reference point for setting the initial RAB.

4.20 In the international airport sector, the most common method for setting the initial RAB is the indexed historic cost based approach, which is used by the UK CAA and the Irish CAR. In Australia, prior to moving to price monitoring, the ACCC used the optimised deprival value approach in its assessment of the RAB for Sydney airport, supported by several detailed consultancy studies of the airport. The South African Regulating Committee to ACSA and ATNS uses historic cost for specialist assets and depreciated replacement cost for non-specialist assets.

Domestic Experience

4.21 The approach domestically has, generally, been to apply the historic cost approach to valuing the initial RAB. For example, TAMP's ROCE approach uses gross block approach, taking the total value of the company assets on the basis of the cost to acquire them (i.e. historic cost). The same basis for valuing the initial RAB has been used in the electricity sector, with an additional adjustment applied to take account of any contributions made towards the cost of the asset by other parties, including any grants / subsidies received for this purpose.

The Authority's Assessment of RAB Valuation

4.22 The Authority recognises the importance of initial RAB determination for regulatory certainty and does not intend to review initial RAB once determined. Given the technical and practical issues associated with complex valuation or cost based techniques for valuing the initial RAB, the Authority supports the use of a historic cost approach for determining initial RAB.

[9] Alternative methodologies to measure the regulatory asset base of regulated companies: Report to the Commission for Aviation Regulation, August 2001, Professor Colm Kearney, Dublin City University.

Given that the initial RAB values investment already made by airport operators, the Authority will include all historical investment made by the Airport operator. While doing so, it will, inter-alia, take into account the following:

(a) Evidence of competitive procurement for major capital investments

(b) Evidence that investment was in accordance with GoI approved master plan /capital investment plan

(c) Evidence that investment, if any, over and above as provided for in (b) above was necessary for proper functioning of airport, including the users consideration and / or was made at the specific request of users and stakeholders.

4.23 Only where insufficient evidence is available and in exceptional circumstances would the Authority seek to exclude investment already made by airport operators from the initial RAB. This approach is consistent with the transitional arrangements outlined for capital investment in section 5.

4.24 In this context, as mentioned earlier, the Authority received a submission that there was a need to consider the issue of a hypothetical regulatory base, as mentioned in the respective concession agreements for MIAL and DIAL.

4.25 The State Support Agreements for these airports provide that the regulatory base, as defined therein, for the first regulatory period, would be the sum total of:

(a) "*the Book Value of the Aeronautical Assets in the books of the JVC and*

(b) the hypothetical regulatory base computed using the then prevailing tariff and the revenues, operation and maintenance cost, corporate tax pertaining to Aeronautical Services at the Airport, during the financial year preceding the date of such computation."

4.26 As mentioned earlier, the Authority will consider the effect of concession agreements on its approach for affected airports before determining tariffs for the first tariff cycle. The Authority will consider such adjustments, among other possible treatments vis-à-vis such concession agreements, in the light of its objectives described in paragraphs 3.6 and 3.7 of Part I. Paragraph 8.16 below may also be referred to in this context.

Roll forward of RAB between review periods

4.27 Once the initial valuation of the RAB has been derived a key aspect of regulation will be rolling forward the RAB between review periods, taking into

account the entry and exit of assets from the RAB and adjusting for differences between projected capital investment (made at the time of the regulatory determination) and actual capital investment (the values at the end of the review period). In particular the Authority is likely to make the following adjustments to the RAB between review periods:

- Entry of assets to RAB: Capital investment
- Exit of assets from RAB: Asset disposals
- RAB maintenance: Depreciation

4.28 Under the current proposals for the use of a nominal cost of capital to be applied to the RAB, as per section 3, the Authority will not adjust the RAB for inflation.

Entry of assets to RAB – Capital Investment

4.29 The principles relating to the development of capital investment plans through user consultation and the principles relating to capital investment are detailed in section 5. The Authority will apply these principles to roll forward the RAB and to account for differences between projected and actual capital expenditure.

Exit of assets from RAB – Asset Disposals

4.30 A clear principle of the RAB is that assets will leave the RAB when they are disposed. Whilst the principle is clear enough, it is important to define the approach that the Authority will take to adjusting the RAB for the disposal of assets, which largely relates to the approach taken to valuing the adjustment to the RAB. There are two potential approaches. Firstly, the value of the asset as recorded in the RAB can be applied, the asset can be removed from the RAB at the value in the RAB (written down value) and an adjustment made for the returns made on the asset whilst being in the RAB after its sale date. Secondly, the RAB can be adjusted by the sale proceeds from the asset. The adjustment will depend on the sale proceeds compared to the valuation in the RAB.

4.31 The key issue in deciding the approach for asset disposals is to consider the incentives on the company to ensure that company disposes of assets appropriately and for the benefit of users. Internationally, regulators have generally argued that adjusting the RAB by the sales proceeds has more effective incentive properties in ensuring that companies will appropriately dispose of assets. This is reflected in the approach by the UK CAA and the Irish CAR to adjust the RAB by the disposal value of assets, reflecting the

principle that "airport users should be entitled to the gains arising from the sale of airport assets[10]".

4.32 Domestically, TAMP does not explicitly address in its guidelines the basis for asset disposals. However, given that the basis of the RAB is historic accounting cost, this would imply that disposals are adjusted by written down value. In the electricity sector experience, profits from the disposals of assets are generally regarded as part of non-tariff income and are deducted from the revenue requirement.[11]

RAB maintenance: Depreciation

4.33 As with investment, depreciation can be adjusted to take into account differences between actual and projected depreciation, based on the actual capital spend. It will also be necessary to take account of depreciation when rolling forward the regulatory asset base, which can use actual or projected depreciation.

4.34 The favoured approach by some regulators (notably the CAA) internationally is to roll forward the RAB using projected depreciation. The key advantage of this approach is that it reduces the incentives for the firm to adjust the depreciation rates to 'game' the system and give higher depreciation charges in different periods.

The Authority's Assessment: RAB roll forward

4.35 The Authority will roll forward the RAB using actual capital investment, subject to the investment corresponding to the Authority's requirements for user consultation, as outlined in section 5. The Authority may also apply incentive adjustments to ensure a consistent incentive for the over and under recovery of capital costs.

4.36 The Authority will use the projected depreciation to roll forward the RAB. That is the depreciation used at the start of the RAB period will be applied in rolling the RAB forward.

4.37 The Authority will look to examine all asset disposals to satisfy itself that the sale price was consistent with market prices and thus appropriate to be deemed 'fair' and apply the realised value of disposal for the asset (adjusted, if

[10] Decision for Stansted Airport Price Control 2009-2014, UK Civil Aviation Authority, March 2009.

[11] DERC's 2007, regulations for transmission companies notes that "profit derived from disposal of assets", shall be treated as non-tariff income and "The amount received by the Licensee on account of Non-Tariff Income shall be deducted from the aggregate revenue requirement in calculating the net revenue requirement of such Licensee."

required, to reflect the Authority's assessment of possible market prices) to adjust the opening RAB in the next regulatory period.

4.38 An Illustrative example of this process is given in section 5. A summary of the Authority's proposed approach to rolling forward the RAB is illustrated below:

RAB at the start of a year/period

+

Actual capital investment

(Subject to user consultation provisions and incentive adjustments)

—

Projected depreciation

—

Disposal at fair[12] value / proceeds

=

RAB at the end of a year/period

[12] With reference to the approach discussed in paragraph 4.37 above.

5. CAPITAL INVESTMENT

Submissions in response to White Paper

5.1 The White Paper outlined two important contexts for the development of capital expenditure plans by airports: the process established in India for the development of airport master-plans and the central role of consultation in ICAO principles and international experience.

5.2 Responses from DIAL, GHIAL and AAI emphasised that capital expenditure required to fulfil approved airport master plans should be respected.

5.3 The response from DIAL and GHIAL noted that the State Support Agreements require the concession companies to consult on major airport developments and that it is strongly in the airports' interest to consult with their customers on all issues which are likely to affect their interests commercially or operationally.

5.4 Among user respondents, the Federation of Indian Airlines and Air India Charters also supported the principle of user consultation.

5.5 Fraport AG argued that the Authority should play the role of facilitator to encourage effective user consultation, and highlighted that the flow of information in such consultation needs to be two-way, airlines to airport as well as airport to users.

Provisions in Indian legislation and agreements

5.6 As a signatory to the Convention on International Civil Aviation, India recognises ICAO's general tariff principles. Paragraph 24 of ICAO Doc 9082/8 states:

> *"The Council also considers it important that users or their representative organizations be consulted concerning capacity development and investment plans. The purpose of such consultation is to ensure that the developments proposed meet the needs of users and that users are aware of the financial implications in terms of the charges they would have to pay. Similarly, in order that providers may better plan their future financial requirements, users, particularly air carriers, should for their part provide advance planning data to individual providers on a 5- to 10-year forecast basis relating to future types, characteristics and numbers of aircraft expected to be used, the anticipated growth of aircraft movements, passengers and cargo to be handled, and other relevant matters."*

5.7 The Airports Authority of India Act, 1994 makes no explicit provision regarding user consultation. However, concession agreements entered into by GoI in recent years embed the principle of consultation.

5.8 The State Support Agreements for DIAL/MIAL refer to:

- The Master Plan should be consistent with the ultimate vision for the Airport and in full consultation with all relevant Airport users and stakeholders

- For each major development, the Development Plan should have been subject to consultation with all relevant stakeholders and, in the case of aeronautical developments, must be the subject of full consultation with airport users and adequately take into account their requirements

- As a Principle of Tariff Fixation, the airport will be required to consult and have reasonable regard to the views of relevant major airport users with respect to planned major airport development.

5.9 The Concession Agreements for Development, Construction, Operation and Maintenance of Bangalore and Hyderabad Airports provide that with respect to construction of the airport, the operators shall taking into account and subject to increased demand, the availability of funding, the economic and profitable operation of the Airport at that time and the reasonable requirements of users of the Airport, develop and implement detailed proposals for the expansion of the Airport.

A. General Principle – User Consultation

5.10 The Authority considers that it is a generally accepted principle, and one that is recognised in recent concession agreements in India, that airport development should be taken up after appropriate user consultation. It follows that the quality of consultation and the extent to which stakeholder representations have been reasonably taken into account would be the key considerations for the regulatory assessment of tariffs.

5.11 The primary responsibility for consultation with users on all material aspects of airport development lies with the airports. However, the Authority considers it important to establish the consultation standards that it expects airports to follow. The Authority will consider the efficacy of airport consultation processes against these standards in making its tariff setting decisions. Specifically, before accepting that capital expenditure should be included in its assessment of the RAB, the Authority will consider whether consultation was effective and whether the airport has acted in good faith in taking into account all reasonable representations of stakeholders.

5.12 The Authority recognises that airport development is an ongoing and continuous process that does not necessarily synchronise with the timetable of periodic regulatory decisions on tariffs. The Authority is, therefore, minded to specify a Consultation Protocol that would be an ongoing process and a mechanism for that process to inform the Authority's decision making.

5.13 Although the central focus of the Protocol is on capital investment, the Protocol covers all aspects of airport development that are material to users, including the business vision and strategy, traffic forecasts, the management of airport operations and the development of non-aeronautical activities to the extent that they impact on aeronautical activities, development, tariffs, asset usage or asset disposals.

Features of the Consultation Protocol

5.14 The Authority's proposed form of Consultation Protocol is set out as an Appendix (Appendix 7) to this document. In developing this protocol, the Authority has been informed by ICAO principles and good practice consultation processes established internationally. It has in particular been informed by the Information Protocol established by the UK's CAA in 2009 for Stansted Airport which was developed in the light of the experience of consultation between that airport and its airlines and the practical issues such a protocol would need to address.

5.15 The Authority considers that the effectiveness and credibility of the airport-user consultation process will be underpinned by:

- The openness of the process to all users with a legitimate interest in airport planning and investment;
- The scope and quality of information shared in the consultation process;
- A reporting process that informs the Authority and provides a basis for investment to be assessed for inclusion in the RAB;
- Recognition that consultation is an ongoing exercise that should be integral to the airport's planning and investment processes.

5.16 The Consultation Protocol provides guidance on the constitution of an effective consultation process including:

- The establishment of an Airport Users Consultative Committee (AUCC) for each airport for purpose of engaging with airport operators through the process of user consultation. The composition of AUCC is proposed to be in line with the stakeholders identified in the Authority's Guidelines on Stakeholder Consultation dated 14th December 2009;

- The ongoing process of consultation between the airport and the AUCC;
- The information that will be necessary for the airport to share with the AUCC; and
- The process of reporting issues to the Authority.

5.17 The test of whether the process is successful is whether users consider they are informed so that they have a reasonably comprehensive understanding of the airports project investments and their linkages with the overall strategy and vision of airport development. The Authority would need to be reassured that the airport operator is taking user concerns into account before making key decisions relating to those projects.

B. Assessment of capital expenditure for tariff setting

5.18 At the time of a price review, the Authority will need to assess the value of the RAB, which is the denominator for the allowed return, as outlined in section 3. In this assessment, the Authority need to consider three aspects of capital investment:

- What future capital investment should be included as additions in the Authority's forecast of the RAB;
- What past investment should be included in the opening RAB (at the end of the last financial year for which accounts are complete before the review is concluded), and what incentive adjustments or commitments does the Authority need to make in respect of the RAB or tariffs to ensure development is appropriately incentivised;
- What transitional arrangements should be in place for projects that were substantially committed prior to the Consultation Protocol coming into effect.

Projects yet to be completed

5.19 The Authority would expect to see evidence in AUCC reports, or otherwise, that each relevant project has been subject to consultation at an appropriate level for the stage of development of the proposal. The Authority would expect to see evidence that users were presented with the information specified in the Protocol at each of the main stages (need identification, strategic options generation, specification brief, design, procurement, completion), that the airport has considered users' representations and a formal and full justification where it has made decisions in the absence of user agreement or consensus

5.20 The Authority would expect to see a full reconciliation between the costs being presented to the Authority in the capital investment plan and the costs presented to users to inform consultation at each of the stages. Where there are material differences, the Authority will expect to see evidence that users have had an opportunity to consider any material differences and communicate whether and how their positions on the project might be qualified or changed as a result of the differences.

5.21 Where some or all users do not concur with any material aspect of a project, the Authority would expect to see evidence of the steps taken by the airport to try to resolve the issues and a full justification of why the airport has made its proposals notwithstanding those issues. The Authority would expect to see the justification expressed in terms of the needs of users and evidenced where possible. Through the regular AUCC reports, the Authority would expect to have been made aware at an early stage of any emerging disagreements. If in doubt, an airport would be able to consult with the Authority on the level of evidence the Authority might reasonably require to inform a positive decision.

5.22 Where there have been insufficient justification in respect of unresolved disagreements or insufficient evidence that the Protocol has been followed, the Authority would expect to consult with users itself on those aspects of the programme.

5.23 The Authority would also expect to consult on the generality of the programme to ensure that users have an opportunity to express their views on projects outside the scope of the AUCC and that users who have not been involved in the AUCC have an opportunity to express their views on all projects. As the AUCC is the formal consultative committee that would include users of all classes, the Authority would not expect this wider consultation to lead to any modifications of proposals where AUCC consultation has been satisfactory, other than in very exceptional circumstances.

5.24 In the absence of evidence that users are content to accept project castings, the Authority would expect to carry out an exercise to validate costs included in the capital investment plan and inform its determination of the efficient cost for inclusion in the forecast RAB. In line with general regulatory practice in other countries, the Authority may engage appropriate experts to carry out such a validation exercise.

Projects completed since the last review

5.25 The Authority would expect to see evidence in AUCC reports, or otherwise, that changes in the capital investment plan since the Authority last made an assessment on relevant projects have been subject to and informed by consultation. The Authority would also expect to see evidence of continuing

consultation on those projects through to completion and review. Further, the Authority would expect the AUCC consultation process as a primary source of evidence regarding the outputs and costs of the capital programme and how they compare with expectations at the time of the previous review.

5.26 The Authority recognises that airports are dynamic businesses and outturns will be different to expectations. In accordance with its incentive objectives, the Authority recognises the need to encourage out-performance on costs or outputs and discourage underperformance on a reasonably symmetrical basis. In general, the Authority will not wish to claw back out-performance gains made during a control period (e.g. savings in financing costs arising from reductions in capital expenditure not associated with reductions in outputs). Similarly, to the same extent that it would incorporate outturn capital expenditure in the opening RAB for the next period where savings have been made, it would also incorporate outturn capital expenditure in the opening RAB where costs have increased.

5.27 In accordance with its incentive objectives, the Authority may consider the need for other incentive adjustments in its tariff determinations to reflect out-performance or underperformance in outputs, including the time of commissioning, to ensure consistency with economic incentives in respect of costs. Incentive adjustments could be incorporated in advance in a suitable trigger mechanism or in the price cap for the following period. At each price review, the Authority expects to set out the broad principles of the approaches it intends to take at the following price review in respect of investment activities during the period.

5.28 Where the Authority considers it necessary to supplement the AUCC consultation process, including AUCC reviews of completed projects, it would expect to carry out an exercise to assess the efficient cost for the outputs associated with the projects to inform its assessment of any incentive adjustments that may be necessary. The Authority may engage appropriate experts to carry out such an exercise. Further, the Authority would maintain the principle of symmetry to ensure that underperformance would be dis-incentivised in the same way that out-performance would be incentivised.

5.29 The Authority expects consultation principles to be adhered to. To protect users, the Authority will need to consider the extent to which the project meets user needs in an efficient and timely manner, for which effective consultation is the best guarantee. Where a project has been undertaken without appropriate consultation, an airport should not expect the Authority to recognise the costs associated with the project in full in the RAB. The Authority would seek evidence for user support for the project and examine the airport's rationale for the project to inform its assessment of whether and to what extent the project should reasonably be remunerated by users.

Transitional arrangements

5.30 The consultation standards established in the Protocol will apply once the Protocol comes into effect. In the interim, the Authority expects general consultation principles to be adhered to by airports.

5.31 For projects that were substantially committed prior to the Protocol coming into effect, the Authority will presume that the project should be included in the RAB and will only exclude any part of a project if it has reasonable evidence that the project was not undertaken in good faith for the benefit of users.

5.32 The Authority may qualify its presumption if it has evidence that general consultation principles established in relevant concession agreements were not complied with.

Capitalisation of financing costs on WIP assets

5.33 The Authority recognises the principle of permitting a fair rate of return on a fair value of investment. Expenditure that is necessary to be incurred on projects in advance of those projects coming into operation represents part of that investment. It follows that the Authority should permit a fair rate of return on such investment.

5.34 Subject to the position stated in paragraph 5.41 in respect of assets financed through pre-funding, the Authority will adopt a capitalised financing approach, which will ensure that users do not have to pay for assets until they have been commissioned and are in use. This approach is consistent with the approach adopted by the South African Regulating Committee to ACSA and ATNS. It differs from the approach adopted by the UK Civil Aviation Authority and Ireland's Commission for Aviation Regulation which apply the same rate of return for WIP assets as for commissioned assets. Practice in other regulated sectors in India is mixed.

5.35 The Authority's approach to assessing the fair rate of return for the purpose of setting tariffs is set out in section 3. The approach recognises that an airport is exposed to systematic risk as reflected in the equity beta. That systematic risk in part arises from uncertain demand for airport services and the consequent uncertain revenues. An airport is not in the same way exposed to those risks in respect of WIP assets that are not yet operational and not yet being remunerated by users. The airport is exposed to other risks arising from the construction phase of a project, but it is less clear to what extent these risks

are systematic or cannot be managed by the airport[13]. Accordingly, the Authority's assessment of the fair rate of return for WIP assets will be its assessment of the cost of debt as per paragraph 3.48.

5.36 There are two ways in which a fair rate of return can be allowed:

- By including an allowance for the fair rate of return in the cost of bringing the asset into operation (capitalised financing)
- By including an allowance for the fair rate on WIP assets in the calculation of allowed tariffs

5.37 In order to preserve incentives for out-performance or underperformance in expenditure on a project during the course of a price control period, the Authority will normally include projected capitalised financing in the opening RAB without adjusting for outturn expenditure levels.

Illustrative example

5.38 The following tables set out an illustrative example of this approach where a project is completed for less capital expenditure but a year late.

[13] A report for the UK CAA by Europe Economics, 'Cost of capital – estimating separate costs of capital for Heathrow and Gatwick', December 2006, noted that capital expenditure could be a source of resilience to systematic risk (paragraphs 3.70 and 3.73).

Illustrative example

Policy assumptions	
WIP assets fair rate of return (on average RAB)	10%
Commissioned assets fair rate of return	15%
Asset life	10 years

Projected RAB for project A	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Capitalised finance at the start of the year		5	56		
Capitalised finance on WIP RAB	5	50	100		
Compounded capitalised finance		1	6		
Commissioning at the end of year 3			-161		
Capitalised finance at the end of the year	5	56	0	0	0
WIP RAB at the start of the year	0	100	900		
Additions during the year	100	800	200		
Commissioning at end of year 3			-1100		
WIP RAB at the end of the year	100	900	0	0	0
Commissioned RAB at the start of the year				1261	1135
Depreciation				-126	-126
Commissioning at the end of year 3 - capex			1100		
Commissioning at the end of year 3 - financing			161		
Commissioned RAB at the end of the year	0	0	1261	1135	1009
Average Commissioned RAB	0	0	0	1198	1072
Amounts included in required revenues					
Allowed return on commissioned RAB				180	161
Depreciation				126	126
Total	0	0	0	306	287

Outturn RAB for project A	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Capitalised finance at the start of the year		5	56	161	
Projected capitalised finance on WIP	5	50	100		
Projected compounded capitalised finance		1	6		
Commissioning at the end of year 4				-161	
Capitalised finance at the end of the year	5	56	161	0	0
WIP RAB at the start of the year		100	600	900	
Additions during the year	100	500	300	100	
Commissioning at the end of year 4				-1000	
WIP RAB at the end of the year	100	600	900	0	0
Commissioned RAB at the start of the year					1035
Depreciation (on projected basis)				-126	-126
Commissioning at the end of year 4 - capex				1000	
Commissioning at the end of year 4 - financing				161	
Commissioned RAB at the end of the year	0	0	0	1035	909
Amounts included in actual revenues					
Allowed return on commissioned RAB				180	161
Depreciation				126	126
Total	0	0	0	306	287

Note: amounts included in actual revenues in this table ignore the effects of volume changes compared with assumptions at the time of the previous review.

5.39 The example illustrates that the company retains the savings in financing costs for the duration of the control period.

- For years 4 and 5, tariffs had been set on the assumption of depreciation and the fair return allowance on commissioned RAB for a more expensive project. The company has saved on financing the project during the control period and incentive objectives would, normally, require that this gain is not clawed back.

- During the course of construction, similarly, the assumption for the financing costs included in capitalised financing is preserved to maintain the same incentives.

5.40 However, as well as saving capital expenditure, this particular project has been delivered late. The Authority may consider incentive adjustments in one of two ways

- At the earlier price review, the Authority could have specified a trigger mechanism that would permit an increase in airport charges arising from the project being commissioned only from the date of commissioning.

- Alternatively, the Authority could consider incentive adjustments to be incorporated into the price cap for the following period as described in paragraph 5.29.

Pre-funding

5.41 Where Development Fees are levied for pre-funding of airport developments, assets funded out of Development Fee receipts will not form part of the Regulatory Asset Base. Accordingly, no depreciation on such assets would be considered for the purpose of tariff determination.

6. DEPRECIATION

6.1 As highlighted in the White Paper the issue of depreciation is closely linked to the regulatory asset base and represents the 'return of capital'. The key determinants of depreciation are the life of the asset assumed and the method of depreciation followed.

Submissions in response to the White Paper

6.2 Consultation issues on depreciation were raised by DIAL, GHIAL, APAO, IATA, AAI and the Kenan Institute of Private Enterprise. Briefly, the following responses were received:

- Asset lives – DIAL / GHIAL and APAO raised concerns over applying standardised asset lives, such as those under the Companies Act, for airport assets. AAI and IATA advocated calculating depreciation based on the useful life of the asset.

- Depreciation on hypothetical asset base – DIAL and APAO supported the application of depreciation on the hypothetical asset base.

- Repayment of debt – Concerns were raised by APAO that there may be miss-matches between the period of debt repayment and the period of write-off of an asset, which may result in issues for debt servicing. To this end APAO suggested that an advance against depreciation may be required, adopting approaches such as those used by CERC.

- Depreciation on state funded assets – DIAL and APAO noted that whilst assets funded from ADF should not form part of the RAB, they need to be treated in the calculation of depreciation.

- Depreciation on other capital investment - Airport operators noted that depreciation should be recovered on all of its investment as part of overall airport development.

6.3 In addition to these specific responses on depreciation, the Authority received general support that the regulatory accounts of the airport do not necessarily need to reflect statutory accounting provisions, especially for the treatment of the RAB and depreciation.

International approaches to Depreciation

6.4 As noted in the white paper, in the UK, the CAA has explicitly used depreciation to account for regulatory decisions or to accelerate or defer revenues between periods, for example to permit a smoother progression of tariffs over time. The key principle of this is to ensure that the firm is no

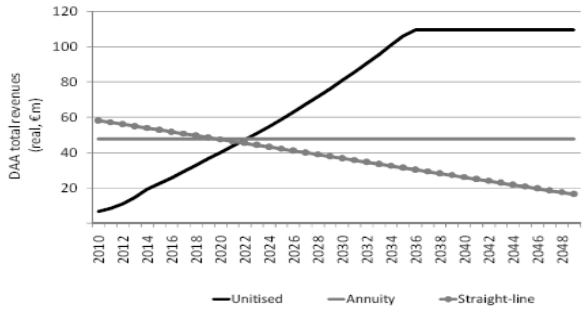
better off, but that the tariffs charged to users remain appropriate and stable over time. In terms of the actual depreciation rates used to estimate depreciation the CAA takes the depreciation assumptions provided to it by BAA. The Irish CAR considered depreciation in some detail in its consideration of Dublin airport charges for 2010-14, largely related to the issue of how to allow for the development of the new terminal T2. A summary of the CAR's analysis is presented in Box 1. In assessing depreciation, the Australian CCC used a straight line approach to depreciation and used asset lives on the basis of recommendations by independent consultants.

Box 1: Commission for Aviation Regulation approach to depreciation

The Irish CAR looked at two aspects of depreciation in its determination of Dublin airport charges for 2010-14. Firstly, the CAR concluded that the financial position of Dublin airport had deteriorated so much that "it should accelerate some depreciation charges and increase the level of airport charges that the DAA can collect in 2010"[14]. The CAR also noted that "In net present value terms, the DAA does not gain from the change."[15]

Secondly, the CAR also looked at different approaches for measuring depreciation for the purposes of recovering capital costs of the new terminal two. The CAR identified two alternatives to straight-line depreciation. The first, an "annuity approach", which would have allowed the DAA to collect the same amount for each year of the asset life (note this does not mean all passenger will pay equally as more passengers use the facility the depreciation charge per passenger will fall). The second, an "unitisation approach" seeks instead to structure repayments so that users across time are treated equally. The effect on revenue is shown is the diagram below:

Exhibit 5: CAR example of depreciation methods on Dublin Airport Authority revenues



The three options identified by the CAR resulting in significantly differing revenue paths. Taking into account its statutory duties, the CAR choose an annuity approach for depreciating new capital investments and provided detailed assumptions on the asset life used in its depreciation calculation.

Domestic approaches to Depreciation

6.5 In its guidelines for tariff determination for the period 2004 - 2009[16], CERC allowed up to 10% of the loan amount as an advance against depreciation (less actual straight line depreciation based on the asset life) in order to meet loan

[14] Final Determination – Dublin Airport Charges 2010 – 2014, Commission for Aviation Regulation, 2009.

[15] Ibid.

[16] CERC (Terms and conditions of tariff) Regulations, CERC, 2009

repayment terms of ten years (i.e. advance against depreciation is only allowed if depreciation does not cover the interest charges).

6.6 In its more recent tariff determination for the period 2010 – 2014, CERC has removed the concept of advance against depreciation; however it has adjusted the depreciation rate from 3.6% to 5.28% (weighted average depreciation rate) to compensate for this. The depreciation rate is intended to reflect the normative loan life in the sector and to ensure that debt repayment is adequately covered. CERC notes that depreciation rates may differ from those contemplated under the Companies Act.

6.7 To calculate depreciation CERC uses a straight line method at rates specified for different assets and excluding land (apart from reservoirs), allowed to 90% of the capital cost of the asset.

6.8 More generally across electricity sector regulators, a range of different approaches to depreciation have evolved, with some convergence to CERC rates, depending upon the particular State's circumstances[17]. In the ports sector, TAMP also use the straight line method following the asset life in the Companies Act. Where there are concession agreements in place with private operators, TAMP considers the asset lives as indicated in the concession agreement.

Depreciation and Pre-funding

6.9 Issues relating to pre-funding of capital investment and the consequential treatment of depreciation in the RAB are addressed in section 5.

The Authority's approach to Depreciation

6.10 The Authority proposes to use the straight line method of depreciation based on depreciation rates indicated in the Companies Act or other evidenced sources, where appropriate.

[17] Issues pertaining to tariff policy, Forum of Regulators, 2007-08

7. TRAFFIC FORECASTS

7.1 Traffic forecasts constitute an important input to the process of deriving tariffs, both in terms of informing the assessment of operating expenditure, non-aeronautical revenues and investment needs and in terms of converting an overall revenue requirement into a price control.

Submissions in response to White Paper

7.2 There were two responses which relate to traffic forecasting. DIAL noted that it may be appropriate to consider a reasonable band or range within which tariffs may change for variance in critical assumptions such as traffic. In its response, APAO supported the development of a risk allocation framework that allocates risks including traffic. APAO also provided evidence on the volatility of the traffic in the Indian context, and highlighted this as a key risk in it cost of capital considerations.

Issues in traffic forecasting

7.3 Air Traffic Forecasting techniques may include various explanatory variables such as national GDP growth rate, index of industrial production, net national disposable income, growth in tourism, air fares etc. Factors driving the demand for air traffic in the long-term include population growth, growth of national and global economy, increase in world trade, performance of competing transport modes, government policies, regulatory requirements etc. In the short-term, factors including prevailing air fares, fuel costs and non-fuel costs of flying, security scares like terror attacks leading to lower consumers' confidence, political instabilities, temporary ban on international transaction of certain commodities, business interruptions etc. could affect the demand for air traffic.

7.4 While the traffic growth at 12 major airports in India from 2001-02 to 2008-09, depicts significant variations in the growth rate year-on-year (ranging from a negative growth in 2008-09 to a peak positive growth in 2006-07), the long-term trend is positive with approximately 15% CAGR over the period for passenger traffic, but with considerable variation, with a standard deviation of 12%.

Exhibit 6: Major airport passenger movements growth

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	CAGR
Mumbai	7.1%	8.8%	18.1%	18.0%	21.9%	17.7%	-8.2%	11.5%
Delhi	7.3%	15.0%	23.3%	27.6%	26.2%	17.5%	-3.7%	15.7%
Hyderabad	13.9%	16.8%	27.5%	40.4%	43.9%	21.5%	-11.0%	20.6%
Bangalore	33.0%	5.1%	29.3%	37.5%	43.7%	24.6%	-13.4%	21.2%
Cochin	21.3%	31.9%	19.8%	18.2%	35.9%	30.5%	0.4%	22.0%
Calicut	20.6%	4.1%	43.1%	2.4%	18.0%	16.2%	27.5%	18.2%
Chennai	9.7%	9.7%	23.6%	21.4%	32.7%	18.3%	-7.2%	14.8%
Kolkata	10.7%	10.4%	13.2%	25.7%	36.4%	24.7%	-5.6%	15.8%
Pune	10.1%	13.7%	28.9%	53.0%	71.2%	5.1%	7.1%	24.9%
Ahmedabad	6.5%	9.9%	31.2%	49.4%	37.3%	25.3%	-6.8%	20.5%
Trivandrum	5.8%	5.8%	8.2%	14.0%	34.5%	18.0%	-7.0%	10.7%
Goa	6.5%	17.3%	28.1%	32.2%	32.2%	16.6%	-13.9%	15.9%
Total	10.33%	11.34%	21.84%	25.28%	30.54%	19.49%	-6.60%	15.44%

Source: AAI, DGCA

7.5 The variation in traffic numbers witnessed above, illustrates the difficulty in developing accurate air traffic forecasts, especially in the context of an uncertain domestic and global economic outlook. Although traffic forecasts can be informed by a wide range of historical information and consensus views about the future, there are likely to be significant variances from actual numbers over the review period.

7.6 However, the impact of variations in traffic could be captured through scenario analysis at the time of taking a decision. So while a base case number may form the basis for regulatory decisions over the review period, multiple scenarios of traffic projections could be used to assess the possible outcomes, such as capital investment needs.

Forecast Correction Mechanism

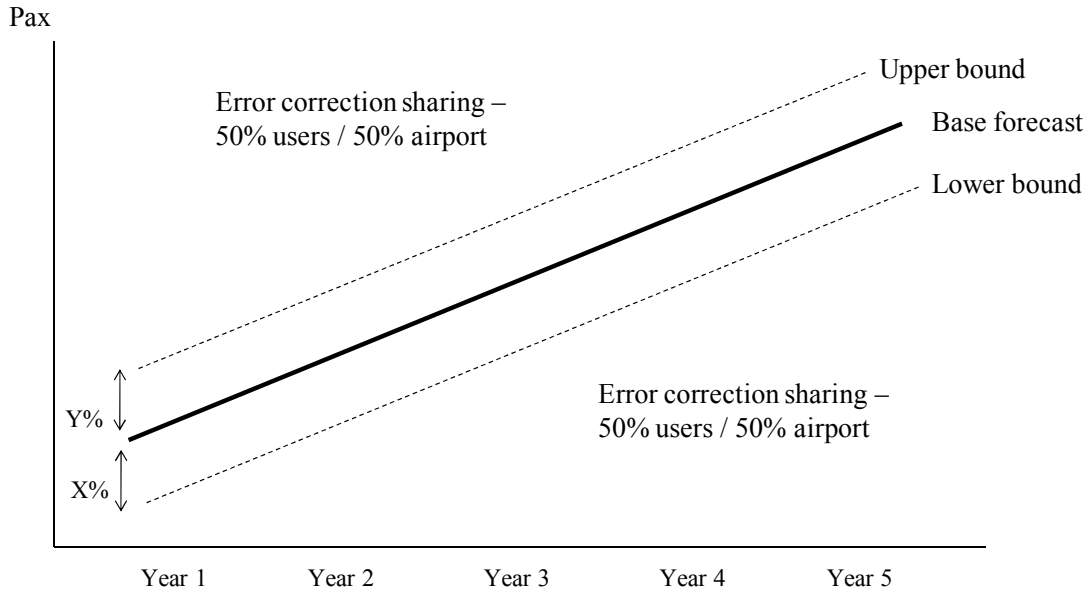
7.7 Variations in traffic will impact on the revenue the airport is able to recover from its users, with a reduction in traffic below forecast levels reducing the revenue that is able to be recovered and vice versa in the case of traffic exceeding forecast levels. Given the uncertainty surrounding traffic forecast and the direct link to revenues and tariffs it is appropriate to consider mechanisms to correct for forecast errors (both upside / downside). Traffic forecasting risk is likely to be a significant risk faced by Indian airports and

reducing the risk associated with traffic forecasting could reduce the overall risk level airports face, and their cost of capital.

7.8 Where traffic forecasting errors are likely to be significant, one option could be to allow an adjustment in tariffs due to variations from forecasts. Hence, if traffic were below forecast levels, there would be an upward adjustment to tariffs to provide for the shortfall in revenues. The adjustments could be calibrated, through a transparent mechanism, to provide a desired level of risk protection.

7.9 A potential mechanism, that helps to reduce the extreme effects highlighted above, would be to introduce a forecast correction mechanism that shares the error correction impact if the forecasts move outside of prescribed bands. This mechanism is illustrated below.

Exhibit 7: Forecast error correction mechanism



7.10 Under the forecast error correction mechanism, if the forecasts remain within the upper and lower bounds (set at prescribed amounts X and Y% of the base forecast) there would be no adjustment to tariffs. However, if traffic forecasts move beyond the bounds the revenue short-fall and corresponding impact on tariffs will be shared between users and the airport.

7.11 The justification for sharing the forecasting error on the downside is that where there are shortfalls vis-à-vis forecasts, airports will benefit from some reduction in operating costs due to reductions in volume and that this should be shared with users, whilst providing some revenue support to airports, as the factors influencing traffic shortfalls are likely to be outside of the airport's

control, for example GDP. Where there is a significant positive outturn vis-à-vis the forecast traffic, the airport could retain some of this benefit in order to provide incentives to grow traffic beyond the forecast and to reflect the incurrence of additional operating costs related to additional traffic. However, some of the benefit of positive outturn vis-à-vis the forecast should be shared with users.

7.12 This mechanism could be consistently applied across all airports (with the same parameters) or could be varied according to the forecasting risks and relevant concession agreements.

7.13 In the case of concession airports, the payment of annual or concession fees to AAI may provide a significant degree of risk sharing. The Authority recognises that it may need to specify separate correction mechanism approaches for concession airports to take account of the risk sharing characteristics of their concession payments.

International Airport Regulators' approach to traffic forecasting

7.14 Traffic projection is a critical input for setting tariff by the South African Regulating Committee on Airports and ATNS Companies. For the purpose of tariff setting, the total aeronautical revenue determined for each year is coupled with the forecast traffic statistics to arrive at prices per unit for the base year and each subsequent year.

7.15 The airport companies are requested to furnish the Regulatory Committee with their assessments of likely future developments in the broad environment in which they operate, as well as specific matters impacting on their operations. Forecasts are therefore required for macro-economic trends and traffic developments. Also, since the companies' revenues are functions of traffic volumes (i.e. the number of passengers and air traffic movements), their composition and tariff levels, there needs to be a careful and convincing argument driving the forecasts. The forecasts are required to be accompanied by a short forecasting report.

7.16 The Committee requires projections of all the variables which drive the companies' revenues. As per the guidelines, the projections should include air traffic movements (ATM) per weight category and flight designation (international, regional and domestic), passenger growth per designation and per airport and fuel throughput volumes. The traffic forecast is required to be based on independent forecasts attained from a reliable source e.g. IATA, Transport Research Laboratory or any other independent air traffic research body acceptable to the Committee. Any deviations from independent forecasts need to be explained and justified. Also, the traffic forecasts are required to be reviewed and agreed to by the airline bodies. In case of any deviations, the

Committee requires the companies and the airline bodies to reach substantial agreement on forecast numbers through the consultation process.

7.17 The Committee requests the companies to present their forecasts in terms of realistic, optimistic and pessimistic scenarios. Also, any variance in actual traffic volumes against those forecast become one of the factors considered for granting of a correction factor to the companies; however the default position is that traffic risk is retained with the airport.

7.18 In UK, multiple stakeholders forecast airport traffic, which are then used by CAA to make an informed decision. CAA re-assesses the provisional forecasts from Competition Commission, BAA and Department for Transport for each airport. The CAA's projections for future traffic are made specifically in the context of setting price caps, within the proposed structure of the price control mechanism, under which the risks of traffic varying from the projections used for price cap modelling rest (on the upside and downside) with the airport operator.

7.19 CAA indicates that it intends, so far as possible, to place reliance on the process of constructive engagement to deliver appropriate passenger forecasts, as part of its broader strategy of encouraging airport-airline consultations to inform economic regulation. In the event that the airports and airlines cannot agree on a single projection for passenger traffic, the CAA considers the level of traffic projections to be incorporated into its price control assessment. Agreement on projections could be achieved for Heathrow and Gatwick airport through constructive consultations and agreements between various stakeholders but not in case of Stansted airport. Therefore, the CAA had to play a more active role and make a detailed review of forecasts in respect of Stansted airport.

7.20 CAA and the CC have considered the introduction of a volume term. The Competition Commission, however, concluded that:

"the airport operator is best-placed to bear the risk that passenger volumes at the airport vary from the forecast. Airlines already bear volume risk, since reductions in passenger numbers are reflected in reduced revenues and profits. We believed that transferring volume risk from the airport operator to the airlines with respect to airport charges would simply magnify this risk"[18]

7.21 The CAA did, however, choose to introduce a so-called 'volume term' into its calculations for NATS revenue requirement, which allows NATS to recover 50% of its revenues through a fixed allowance and the remaining 50% by

[18] Stansted Airport Ltd: Q5 Price Control Review, Competition Commission, October 2008.

reference to traffic volumes served. However, the CAA's decision to introduce such an arrangement for NATS related closely to NATS' highly geared financial structure and its ability to withstand revenue shocks. This adjustment to the risk faced by NATS is also reflected in its cost of capital assessment.

Domestic regulators' approach in other sectors

7.22 In the latest 2008 guidelines, TAMP says that tariff should be prescribed with reference to the optimal capacity of the terminal irrespective of any traffic forecast. In the electricity sector sales projections are generally treated as an 'uncontrollable' item and are considered as part of the truing up process.

The Authority's approach to Traffic Forecasting

7.23 At each price review, the Authority will request airports to provide it with traffic forecasts that have been subject to consultation with users. The Authority will expect to see a clear relationship between traffic forecasts submitted to the Authority and traffic forecasts that have informed investment decisions and the AUCC consultation process referred to in section 5.

7.24 As a minimum requirement, the Authority will expect airports to provide the Authority and users with enough information to reach their own conclusions on the appropriateness of the forecast, the main areas of uncertainty and the level of uncertainty. This information would include forecasting methodologies, the main economic drivers (local, national and global), market drivers, airline strategies, constraints and other principal assumptions.

7.25 The Authority recognises that different stakeholders are liable to take different views on airport traffic projections and agreement may not be reached among the stakeholders. The Authority would reserve the right to review forecast assumptions, methodologies and processes and to determine the final forecast to be used for the determination of tariffs.

7.26 The Authority also recognises that developing accurate traffic forecasts is likely to be challenging, especially for Indian airports in the near future, and that there will be variances between the forecast and actual traffic numbers. Accordingly, the Authority considers it appropriate to introduce a forecast correction mechanism that shares the error correction impact if the forecasts move outside of prescribed bands.

8. OPERATING EXPENDITURE

8.1 Operating expenditure is an important component of the regulatory building blocks and depends upon the operating efficiency and performance of an airport operator. The regulatory treatment for operating expenditure in the price determination can have implications on incentives for the airport operators with respect to achievement of efficiencies in operating costs.

8.2 The White Paper discussed the use of various information / data in assessing the level of likely operating expenditure for the purpose of tariff setting. The paper also highlighted the inherent incentives, under a Price Cap regime, for an airport operator to make savings in its operating expenditure beyond the level of savings mandated in the price cap by permitting the operator to keep additional surplus for the duration of the price control period.

8.3 The linkage of such an incentive framework with the requirement to monitor service performance, highlighted in the White Paper, is discussed later in section 9.

8.4 The White Paper also highlighted that certain mandated / uncontrollable costs, such as those pertaining to security, may need to be treated differently through a cost pass-through mechanism.

Submissions in response to White Paper

8.5 The submissions in response to the White Paper pertaining to the issue of operating costs supported incentives for better performance, as noted by DIAL, GHIAL, Centre for Air Space and Law, Kenan Institute of Private Enterprise. The following issues were also raised:

- Fraport AG noted that savings may at times be made to the detriment of infrastructure expansion, modernization, service or maintenance;
- While Air India Charters, GHIAL and DIAL supported the principle of cost pass through, the position was not supported by IATA, who opposed the use of a cost pass through mechanism on account of its likely impact on airport incentives to seek efficiencies;
- APAO noted that it would be challenging for the airports to make significant cost savings, given the service quality standards specified in concession agreements;
- CII noted that the Authority would need to set a trajectory for achieving efficiency targets.

- The Planning Commission stated that the assessment of operating cost should be based on "qualitative information and should also take into account the uncertainties involved as it would incentivise the service providers to bring efficiencies and make savings without affecting the service level."

Approach by other regulators

8.6 In the UK, the CAA receives projected operating expenditure estimates from the airport company for the price control period. CAA then conducts a thorough assessment of these estimates by preparing its own estimates of operating expenditure and possible efficiency improvements. Such assessment is based on detailed scrutiny of various components as well as inputs from independent studies. The final estimates considered also take into account any specific treatment for uncontrollable or one-time costs.

8.7 A similar approach is also followed by the Commission for Aviation Regulation, Ireland where a due-diligence of the operating expenditure (envisaged under the airport proposal) is undertaken. The due-diligence is also supported by independent assessment of efficiency improvements of various airport functions and processes.

8.8 In India, other sector regulators also examine the reasonableness of operating costs to ensure that inefficiencies, uneconomic uses / practices are not passed on to users. TAMP, as per its 2008 guidelines for upfront tariff setting for PPP projects, has fixed operating expenditure norms based on the optimum capacity of port terminals (allowing for inflation based adjustments). As per its 2005 guidelines for tariff fixation, in order to encourage cost reduction through improvement in efficiency / productivity of operators, TAMP provided for a rolling incentive. At the time of every periodic review of tariff, only 50% of the actual cost reduction achieved due to efficiency improvement in the previous cycle was provided to be considered for estimating operating expenditure for fixing tariff for the succeeding tariff period. The expenditure projections are also provided to be in line with traffic projections adjusted for any price fluctuation with reference to movement of the Wholesale Price Index for All Commodities announced by the Ministry of Finance, Govt. of India.

8.9 In the power sector, regulators undertake due-diligence of business plans submitted by the utilities taking into consideration factors underlying the utility's business. For instance, the DERC Terms and Conditions for Determination of Transmission Tariff Regulations, 2007 require the utility to submit the O&M expenses for the control period as per prescribed procedure. The O&M expenses for the Base Year are to be approved by the Commission taking into account the latest available audited accounts, business plans filed by the Transmission Licensees, estimates of the actuals for the Base Year, prudence check and any other factor considered appropriate by the

Commission. The projections of O&M expenses are to be based on utility costs in the base year and appropriate considerations for operations in the following years. The projections of O&M expenses are to take into account an efficiency factor, at an aggregate level, which is to be determined based on Licensee's filing, benchmarking, costs approved by the Commission in the past and any other factor considered appropriate by the Commission.

The Authority's Assessment

8.10 Based on standard regulatory practice, the Authority expects the assessment of operating expenditure for the purpose of determining tariffs to start with the forecast costs to be submitted by service providers along with detailed information on the related factors and drivers based on a bottom-up analysis of the individual cost items. The Authority will look to resolve the inherent information asymmetry in its assessment by asking service providers to provide any further information and assistance in the relevant areas as it may require.

8.11 In further considering operating cost requirements for tariff determination, the Authority will seek to appropriately consider:

(a) The baseline level of operating costs at the start of the price control period;

(b) Cost allocations with respect to any common / joint costs related to common facilities;

(c) Identification of un-controllable costs (the degree and quantum) and mechanism for cost pass through; and

(d) Projections of operating costs over the control period with respect to identified cost drivers, efficiency considerations and indexation mechanism.

Cost Allocations and Assessment of Airport Control

8.12 In seeking to ensure that operating costs that are necessary for provision of services at an airport are passed onto the users, the Authority will consider the direct costs for providing these services and fair allocation of any common / joint costs related to common facilities and services which are not part of the defined airport boundary under a single till, like for instance head office cost allocation.

8.13 The Authority will also look to consider the key drivers of operating costs and the degree of control that an airport operator is likely to have over specific cost

categories. The operating costs of a typical airport are affected by number of factors like:

- passenger forecasts;
- airline operating needs and demands;
- business risk;
- market-driven impacts;
- statutory and compliance requirements;
- productivity and operational efficiency improvements;
- impact of capital plans.

8.14 The Authority is minded to consider classification of operating costs as controllable and un-controllable in view of the fact that certain categories of operating costs at airports are impacted by directions / specifications of other regulatory authorities like the DGCA or BCAS. The Authority proposes to allow a cost pass through mechanism for uncontrollable/ mandated portions of operating costs.

Treatment of concession fees / annual fees

8.15 Paragraphs 4.216 and 4.217 of the White Paper had noted that for DIAL and MIAL, the operators share 45.99% and 38.7% of the gross revenues (referred to as Annual Fee) to AAI. The State Support Agreements provide for such fee paid / payable by the operators to AAI not to be included as part of costs for provision of Aeronautical Services and no pass-through to be available in relation to the same. On the other hand, the Greenfield Airports at Bangalore and Hyderabad (required to pay concession fee amounting to 4% of gross revenue to Government of India) have concession agreements providing for such payments to be treated as part of the operating expenses of the airport.

8.16 DIAL, in response to the White Paper, have submitted that:

"*AERA must ensure that the long term viability of the four airports under the PPP model needs to be sustained. Net recovery Post Revenue Share (54% in case of DIAL) will not sustain 100% cost based on building block approach.*"

8.17 The Authority will consider the effect of concession agreements on its approach for affected airports before determining tariffs for the first tariff cycle. The Authority will consider the above issue, along with other possible treatments of those costs, in the light of its objectives described in paragraphs 3.6 and 3.7 of Part I. Paragraph 4.26 of this Part may also be referred to in this context.

Reviewing the baseline level of costs and projections over the control period

8.18 While assessing the baseline level of operating costs to be considered at the start of a regulatory period, the Authority's starting point would be the actual costs incurred in the preceding years.

8.19 The Authority is aware that some regulators have considered a system of rolling incentives where operators have been allowed to retain a part of the efficiency gains in terms of lower actual operating costs with respect to projected operating costs in the preceding regulatory cycle through consideration of a level of operating costs for the next regulatory cycle that is higher (to a defined extent) than the actual (lower) operating costs. However, at this stage, the Authority is unclear about the potential implications of such an approach with respect to tariff for users especially in view of the transitory state the sector is in with a number of capital expenditure programs having been undertaken by airports in the recent past and is minded to consider the actual operating costs as the starting point for the purpose of tariff determination for the subsequent regulatory cycles.

8.20 The Authority will seek to assess the opening or baseline level of operating costs at the start of the regulatory period with reference to costs in the previous year and based on information on factors impacting such costs. The Authority may undertake prudency checks with respect to such baseline level of operating costs including through examining the accuracy of service provider forecast by checking with relevant third parties or contractual arrangements.

8.21 At this stage, the Authority will look to separate out uncontrollable costs from the baseline level which will be considered and analysed at a later stage.

8.22 Based on its review of controllable baseline costs, the Authority will consider the following options to establish the opening/baseline level of operating costs:

(a) Cost items to be kept at their previous year value and indexed forward based on the review of historic and forecast costs, after consideration of traffic growth and expected efficiency savings;

(b) Cost items to be removed from the baseline level based on the assessment of underlying factors, which largely fall into the category of atypical or one-time costs;

(c) Cost items to be replaced with alternative values based on the Authority's review, taking account of passenger growth and expected efficiency improvements; and

(d) Cost items to be removed and analysed separately at a later step, largely based on the assessment of the cost items, which in the Authority's opinion are uncontrollable.

8.23 The Authority will review the operating costs projected by the operators with reference to such baseline controllable operating costs. The assessment will be based on the review of the forecasting methodology used by operators and the identified cost drivers.

8.24 The assessment of operating expenditure forecast may also be informed by the use of methods like historic costs and productivity trends analysis at the airport and econometric analysis to establish historic relationship between traffic and operating cost levels, etc. It is, however, considered that such analyses may not be possible for the first control period in view of the recent capital investment programs at most airports.

Target Efficiency Improvement

8.25 Theoretically, given that airport operations may enjoy economies of scale it could be important to separate out scale effects from genuine efficiency effects. The scale/volume effect arises due to relationship between cost drivers and operating cost levels, which may result in gradual improvement in the unit cost performance not attributable to efficiency improvement made by airport operators. However in practice, estimations of operating costs may inevitably subsume the effect of scale economies as well as efficiency improvement.

8.26 On the issue of possible improvement in operational efficiency and cost competitiveness, the Authority is minded to approach methods like benchmarking over a period of time with considerable judgment, particularly in relation to attendant aspects around identification of comparator airports; the need to use objective metrics; and, in the interpretation of results.

8.27 This form of airport benchmarking and analysis to be effective needs to take into account differences between comparator airports such as the proportionate use of capital and labour resources, the range of activities carried out by the airport, passenger mixes, the airport's stage in its investment life cycle, capacity availability, service quality, 'peakiness' of traffic and levels of airport charges. The failure to normalise the comparative data could potentially result in airports which carry out a broader range of activities being interpreted as being less efficient when compared with comparator airports that have outsourced certain activities.

8.28 In this context, the Authority notes that process level benchmarking, as an assessment tool, has also been used by certain airport regulators like the CAA

in the UK and CAR in Ireland which makes use of independent studies in forecasting the level of possible efficiency over the regulatory period.

8.29 The Authority is minded to consider such approaches in the medium term for detailed review of certain elements of operating costs.

8.30 In the present context, however, in view of the capital investment programs being undertaken at various airports that could impact the operations in the future, the Authority's approach would be to assess operating costs forecasts of the operators with reference to factors like identified cost drivers, productivity trends at the each major airport, etc. Such assessment may also need to incorporate potential efficiency improvement at an aggregate level based on data availability especially in the first control period.

Mechanism for uncontrollable costs and other costs to be analysed separately

8.31 Cost pass-through provisions are part of many incentive regulation frameworks that cater for uncontrollable costs - costs over which the regulated firm can have little or no impact. Provisions that cater for uncontrollable costs are included because the regulator needs to provide the regulated firms with incentives to reduce costs that are under their control while simultaneously insulating them from losses and precluding abnormal profits arising from costs that are outside their control.

8.32 In this context, the Authority's approach will be to allow a pass through of mandated operating costs pertaining to security, subject to appropriate evidence in this regard. The Authority will coordinate in this regard with other regulatory authorities to the extent required to inform its assessment. The Authority is minded to consider determination of the Passenger Service Fee to entirely cover such security related costs in the future. Any costs being defrayed in the past by the Facilitation Component of the Passenger Service Fee will be considered as an integral part of the building blocks and remunerated as discussed in section 11.

8.33 In summary, the Authority's assessment of operating costs will cover:

- Assessment of baseline operating costs based on review of underlying factors impacting variance over the preceding year including treatment for one-time costs or atypical costs. The assessment will also include classification of costs into controllable and uncontrollable categories;
- Assessment of operating cost projection and efficiency improvement for controllable costs based on review of airport methodology, high level trends in operating costs and productivity indicators, identified cost drivers, and other factors as considered appropriate; and
- Assessment of cost-pass through allowance for uncontrollable mandated costs.

9. QUALITY OF SERVICE

9.1 It is generally accepted that economic regulation should consider quality together with price. A framework for monitoring and linking quality of service to tariff determination can align the operator's objectives to the needs of the users and the charges levied to them. Service quality benchmarks in this context should reflect those levels of outputs of airport services which are valued by users. These outputs can be in the form of tangible values such as queue time or intangible values such as comfort and convenience.

9.2 Quality of service is closely related to other key components of regulatory framework such as capacity decision, and operating expenditure. It is, therefore, important that all the incentive effects of regulatory options are considered in an integrated way to ensure that the airport's objective is aligned with the objectives of the overall regulatory framework.

9.3 The ultimate objective of quality of service monitoring and linkage to tariff determination is to ensure that quality of service provided to the users of regulated monopoly services is commensurate with the tariff of charges and takes into account users' preferences. The Authority considers that the key objectives of quality of service monitoring are to:

- ensure the focus of airports on those service parameters which are most valued by the user of services;
- inform the price regulation of airports to ensure that the users pay for desired level of service;
- improve the transparency of airport performance for informed discussion between users and service providers and for possible comparison across service providers;
- act as a tool for effective management of an airport and highlight problem areas to enable service provider to exercise control and influence for better service delivery;
- form the basis of regular dialogue between airport operators and users; and
- highlight areas where additional operating resources and/or capital expenditures may be required. Again, consultation between airports and users will be essential at this stage, as ultimately additional expenditures will have to be met by users.

9.4 The White Paper discussed the importance of monitoring service quality and the various approaches used by other airport regulators. The paper brought out that while determining tariffs different service parameters may need to be considered for setting up of a synchronised incentive regime. It also indicated that possible measures (objective and subjective) could be considered in terms

of the area of service they help monitor, importance to users, control of the service provider over area of service, etc.

9.5 The White Paper also discussed that a monitoring mechanism would need to be specified in terms of the reporting requirements of the operators, the periodicity of reporting required, the steps the regulator would like to be undertaken to assure authenticity / veracity of reporting from operator, etc.

Submissions in response to White Paper

9.6 Across all responses there was recognition of the importance of monitoring quality of service. There was also a general agreement that there should be incentives for achieving service quality benchmarks. There was, however, no agreement on how these incentives should be applied with some favouring bonuses and penalties for service quality performance (DIAL, GHIAL, IIMA, Centre for airspace and law, Blue Dart, Foundation for Aviation & Sustainable Tourism, FICCI, Air India Charters). Other responses (AAI, IATA, CII, FIA) did not support the payment of bonuses for out performance against service quality benchmarks. There was also support (DIAL, GHIAL, APAO, Centre for Air Space and Law, Foundation for Aviation & Sustainable Tourism, FICCI) for the use of objective service quality standards, instead of subjective measures, such as surveys, and for the use of the service standards prescribed in the OMDAs in respect of DIAL and MIAL.

9.7 In addition to the general issues covered above, several specific issues were raised:

- APAO noted that the use of penalties for concession airports, could result in the operator being penalized twice, with concession specifying payments to AAI for deficiencies in service quality standards.

- Fraport AG, CII and APAO noted that it needs to be recognized that the airport operator does not have direct control over many service elements including customs, immigration, ground handling services

- Unique (Flughafen Zurich) noted that there have been challenges with regulating service quality internationally.

Extant Legislative and Regulatory Provisions

9.8 Chapter III, Section 13 (1) of the Act provides guidance on the functions of the Authority in respect of major airports. With respect to the quality of service and performance standards at the major airports, the Act provides following guidance:

- determine the tariff for aeronautical services taking into consideration the service provided, its quality and other relevant factors (ref. Section 13 (1) (a) (ii));

- to monitor the set performance standards relating to quality, continuity and reliability of service as may be specified by the Central Government or any authority authorised by it in this behalf (ref. Section 13 (1) (d));

- to take account of any other factor which may be relevant to the purposes of the Act (ref. Section 13 (1) (a) (vii));

- call upon any service provider at any time to furnish in writing such information or explanation relating to its functions as the Authority may require to access the performance of the service provider (ref. Section 14 (1) (a));

- The Authority shall have the power to issue such directions to monitor the performance of the service providers as it may consider necessary for proper functioning by service providers (ref. Section 14 (4)).

9.9 The Central Government or any authority on its behalf has not, presently, specified any performance standards for airports on a uniform basis. As stated in paragraph 2.2 in Part I, various functions pertaining to oversight of the aviation sector in India have been, hitherto, distributed between the Ministry of Civil Aviation (MoCA), Director General of Civil Aviation (DGCA), Bureau of Civil Aviation Security (BCAS), and Airports Authority of India (AAI).

9.10 DGCA primarily deals with safety issues. It is responsible for regulation of air transport services to/from/within India and for enforcement of civil air regulations, air safety and airworthiness standards. It also co-ordinates all regulatory functions with International Civil Aviation Organisation. The rules and regulations formed by DGCA pertain to technical standards and guidelines in the areas of air worthiness, air transport, aerodrome and air traffic services, air safety, design standards and type certification, flight crew standards, training and licensing, and aircraft operations.

9.11 BCAS is the regulatory authority for civil aviation security in India. The main function of BCAS is to lay down standards and measures in respect of security of civil flights at international and domestic airports in India.

9.12 For DIAL and MIAL, the OMDAs provide for a comprehensive list of service standards to be achieved.

- Over 20 objective service quality requirements, i.e. standards which are objectively measured, are quoted;

- Also over 20 subjective service quality requirements, i.e. standards which are subjectively measured, are quoted, to be evaluated from the ACI/IATA AETRA survey;
- Quarterly Reporting.

9.13 For BIAL and GHIAL, the Concession Agreements provide for measurement of passenger satisfaction under the ACI survey, with annual reporting, starting with the third year of operation (which will begin shortly in both cases). There is no explicit provision for monitoring objective performance standards.

9.14 Of the AAI airports, the two metro airports, Chennai and Kolkata, participate fully in the ACI ASQ and report the results to ACI to be benchmarked against other airports.

9.15 In respect of 5 other major airports of AAI (including two civil enclaves), customer satisfaction survey is conducted through an independent agency to assess the customer satisfaction level on a half yearly basis. Performance levels of top airports of AAI, including two metro airports, are monitored through yearly MoU mechanism with the Central Government.

Service Quality Linkage to Tariffs

9.16 As mentioned earlier, under the Act, the Authority is required to determine the tariff for aeronautical services taking into consideration the service provided and its quality (ref. Section 13 (1) (a) (ii)). While the Authority will discharge its other functions under the Act with respect to monitoring the set performance standards as may be specified by the Central Government, it is presently, enunciating its approach with reference to aforesaid provisions of sub-clause (ii) of Clause (a) of Section 13 (1) regarding consideration of the quality of service provided while determining tariffs.

9.17 While developing such a framework, there are number of issues and factors which need to be considered for enabling informed judgment. The key issues that need to be addressed are:

- Service parameters that should be monitored for each major airport, considering needs of the users;
- Identification of applicable benchmarks for each parameter;
- Addressing service quality concerns in the tariff determination process.

Types of service parameters

9.18 In the White Paper, the Authority drew a distinction between service parameters which are:

- Objective items such as queue lengths, baggage delivery times, availability of loading bridges and so on; and
- Subjective items which are measured based on surveys of passenger satisfaction.

9.19 In addition, it is important to consider the elements of service that are primarily of concern to passengers and which primarily concern airlines or other industry partners in that they have an impact on their costs or operations.

9.20 The objective parameters essentially provide inputs in the areas of asset availability and time issues of service provision. The importance of such measures will be based on the operational requirements of the airlines, directly impacting their operations and service delivery, and the efficient processing of passengers through the airport facilities. Such objective parameters have already been specified for DIAL and MIAL in their respective OMDAs. However, no such objective parameters have been identified in the concession agreements of BIAL and GHIAL, or for Cochin and other major AAI airports.

9.21 Service measures against subjective parameters provide essential insights into the passenger perception of quality of service at the airport. They are important inputs and have to be considered together with measures against objective parameters to identify the problem areas of service.

9.22 The White Paper contained a list of parameters already being monitored / measured in India and elsewhere. It was noted that a considerable volume of information is already being collected – for instance, to comply with the concession agreements for the PPP airports, and by AAI for other airports. Consideration needs to be given to whether this list should be expanded, and to the frequency of monitoring.

9.23 It is notable that measures for objective as well as subjective parameters can overlap – for instance queuing time can be measured objectively, and simultaneously passenger satisfaction with the service would also be largely a factor of time spent in queues. In many instances, it may not be practical to measure quality of service objectively. In such cases, a measure of passenger satisfaction could be a valuable source of information. In any event, passenger satisfaction can identify where service levels are considered inadequate, irrespective of the performance delivered according to objective measures.

Facilities and services to be monitored

9.24 To identify the facilities and services to be monitored, the Authority has considered high level airport processes, international practices highlighted in the White Paper and existing arrangements in India, to pinpoint individual elements of service and derive the parameters that could be used to assess quality of service. In deciding on the list the Authority has considered:

- Services and facilities that may be valued by users as important;
- Degree of control exercised by service provider and the ability to influence performance; and
- The administrative burden in terms of collecting information.

9.25 The stress has been laid on measuring quality of services impacting airlines within the objective parameters and quality of services impacting passengers through the ACI ASQ parameters to ensure completeness of coverage and minimise overlap between parameters. The facilities and services identified are as follows:

- Parking Bays
- Aerobridge
- Flight Information
- Escalators, Lifts & Travelators
- Automated Services
- Facilities for disabled passenger
- Security Check
- Customs, Immigration and Quarantine (CIQ)
- Check-In
- Baggage Delivery
- Passenger Arrival (International and Domestic)
- Handling of Complaints
- Response to Phone Calls
- Baggage Trolleys
- Repair Completion time

9.26 As can be seen from the list above, objective parameters essentially cover aspects of airside infrastructure provision and terminal facilities & services. The coverage of these parameters is broadly discussed below.

9.27 Availability of parking bays will seek to provide information on the instances of delays over the monitoring period, considering the fact that efficient planning and operation of bay allocation delivers a sustained performance. Aerobridge or passenger boarding bridges are also referred as in-contact stands, which require similar planning and operation vis-à-vis remote parking bays. In case aerobridges are available at an airport, the monitoring mechanism will seek to provide information on the availability/operational readiness as well as the proportion of demand met.

9.28 In terms of facilities provided by airport operator at the passenger terminal, the uninterrupted availability of flight information, escalators, lifts & travelators, automated services and facilities for disabled passengers become important elements of smooth airport operations and service delivery. The scope of automated services will include inbound and outbound baggage systems, x-ray machines and public announcement systems. While monitoring the availability will bring out the extent of service failure, it may not adequately guard against the response time to correct the failure. In this respect, it will be important to monitor the repair completion time for such failures. The repair completion time has been further divided into high priority complaints to ensure availability of critical components within set timelines.

9.29 Objective parameters relating to Security Check, CIQ and Check-In focus on time delay aspect of service by measuring the queuing time for each parameter. While focusing on the queuing time, it is also noted that although service in this area may not be under the direct control of airport operator, there is and will be a certain degree of influence exercised over the third-parties involved. For example, number of security gates is part of the regular planning process which is frequently discussed with security agency at the airport and at times adjusted on an on-going basis.

9.30 The passenger arrival process and, more specifically, the speed of the baggage delivery will need to be measured to mitigate inconvenience and time delay caused due to inefficient operation. It is again noted that although airport operator may not have direct control over the complete cycle, it is believed that the airport operator would exercise a reasonable degree of influence over third party activities.

9.31 There are also airport management related aspects of quality of service, which may not directly impact airport operations but are important for passenger facilitation and service. Such aspects, which have been incorporated in OMDA in terms of Handling of Complaints and Response to Phone Calls, should be observed for all major airports.

9.32 The Authority is also minded to a well established methodology to measure passenger satisfaction with airport services. In this respect, the Authority will

consider use of ACI ASQ Survey to measure passengers' satisfaction with of quality of service on the following parameters:

- Ground transportation to/from airport
- Availability of parking facilities
- Value for money of parking facilities
- Availability of baggage carts/trolleys
- Waiting time in check-in queue/line
- Efficiency of check-in staff
- Courtesy and helpfulness of check-in staff
- Ease of finding your way through airport
- Flight information screens
- Walking distance inside the terminal
- Ease of making connections with other flights
- Courtesy and helpfulness of airport staff (excluding check-in, passport control and security)
- Restaurant/Eating facilities
- Value for money of restaurant/eating facilities
- Shopping facilities
- Value for money of shopping facilities
- Business/Executive lounges
- Availability of washrooms/toilets
- Cleanliness of washrooms/toilets
- Comfort of waiting/gate areas
- Cleanliness of airport terminal
- Ambience of the airport

9.33 With respect to subjective parameters measured through ACI ASQ survey, the Authority considers that certain parameters relating to factors mentioned in the survey like Passport/ Personal ID control and Security may not be relevant for measuring quality of service provided by airport operators. Such parameters, in the view of the Authority, are either already covered through objective parameters (like waiting time at security inspection) or considered outside the control of airport operators (like courtesy and helpfulness of security staff).

DIAL and MIAL

9.34 As mentioned earlier, OMDAs for DIAL and MIAL (Schedules 3 and 4) provide for objective and subjective service quality requirements to be met within the specified timeframe and their quarterly reporting to AAI.

9.35 By international standards, the list of objective parameters measured under OMDA is fairly comprehensive and also includes the objective parameters identified above. It is believed that in view of the existing agreements for these airports, the list of objective service quality requirements identified in OMDA will continue to be monitored.

9.36 The Authority will consider the effect of such agreements on its approach for affected airports before determining tariffs for the first tariff cycle.

9.37 In considering the linkage of quality of service to tariffs, two further aspects need to be considered.

Developing the measurement mechanism

9.38 While identifying the service parameters to be measured for major airports, the Authority also needs to specify the framework that will be put in place. There are two clear choices of approaching quality of service measurement by way of either measuring the specified parameters without specifying benchmarks in the first tariff cycle or measuring the specified parameters while specifying benchmarks.

9.39 An important consideration in this regard is that, for the most part, the Authority has limited knowledge of the levels of service that are currently being achieved, and what is realistic for the future. Measuring the specified parameters without specifying benchmarks, in the first tariff cycle, may allow the Authority to build the information pool required to specify appropriate benchmarks in the future while at the same time bringing the required focus on quality of services being rendered.

9.40 In the few other jurisdictions where service standard targets form part of the regulatory regime, measurement of service quality had been in operation for many years, and the results had formed the basis of discussions between airports and airlines. In the case of UK, these discussions had led to the establishment of Service Level Agreements (SLAs) between parties, but only more than ten years after the institutionalising of the regulatory regime.

9.41 However, it is important to note that such a mechanism will not be able to objectively inform the tariff setting process as well as provide enough safeguards against under-performance. Such a mechanism will also mainly rely on the public and peer pressure for performance improvement.

9.42 The Authority is cognizant of the fact that implementation of a quality of service measurement regime has been a fairly recent phenomenon, especially as seen in the case of 4 concession airports. Service quality standards are currently being monitored at these concession airports whereas there may be no significant objective and subjective monitoring mechanism in place at other major airports.

9.43 The Authority recognises the importance of measuring quality of services keeping in mind all the possible perverse incentives on quality of service associated with price cap regulation. In addition, with the on going modernisation and up-gradation of the airport infrastructure, especially at most major airports, it may well be essential to monitor quality of services against benchmarks to ensure acceptable service delivery to the users.

9.44 In the international context, the approaches to setting benchmarks has been informed by the prevailing Service Level Agreements (SLAs) between airports and airlines and the current achievement levels against such benchmarks. However, in the Indian context, the penetration of Service Level Agreements has not been significant to draw insights into the coverage or benchmarking of required quality of services.

9.45 While deciding on the specific objective performance standards for major airports, the existing objective service quality standards specified in OMDAs for DIAL and MIAL are proposed to be considered by the Authority as the starting reference point for specification of benchmarks for all major airports. The Authority believes that benchmarks with respect to availability of facilities/infrastructure and time delay are reasonable and adequate to ensure acceptable levels of services.

9.46 For the subjective performance parameters, applicable for all major airports, the benchmark will be based on passenger satisfaction score of 3.5 on each parameter. The OMDAs for DIAL and MIAL recognize 3.5 (after completion of stage 1 of the Initial Development Plan), as the target rating for subjective service quality assessment, but not for individual items. For BIAL and GHIAL, a similar case exists with a target rating of 3.5. Since the intention of measuring quality of service in terms of subjective parameters is to measure passenger perception of quality of service, and since passengers could potentially be impacted by poor service in any area, it is proposed to make the target rating applicable to each subjective parameter rather than on an overall level of satisfaction so that performance on individual service parameters could be made more transparent and incentivised.

9.47 The quality of service benchmarks specified may be easier to meet at some airports – for instance those with newer facilities, but it would still act as a minimum score to be achieved, and those airports that exceed it could be

expected to achieve improvements over time. As experience is accumulated, further consideration could be given to refinement.

9.48 The Authority will consider the effect of OMDAs for DIAL and MIAL on its approach for these airports before determining tariffs for the first tariff cycle

9.49 The applicable service parameters required to be measured at major airports along with specified benchmarks are summarised in Appendix 8.

Linkages to tariff: Rebates only or Rebates and Bonuses

9.50 In the White Paper, the Authority identified the possible approaches relating to a penalty and bonus scheme based on quality of services rendered and linkage to tariff for aeronautical services.

9.51 In the case of DIAL and MIAL, failure to achieve the stipulated service standards could result in penalty payments. The reporting on the objective and subjective service quality standards needs to be made through quarterly reports to AAI.

9.52 The OMDAs for these airports (under the clause 9.1.2) provide that in the event of default vis-à-vis set objective service quality standards:

"At any time after the JVC is obligated to achieve and maintain a particular Objective Service Quality Requirement, in the event that the immediately succeeding quarterly report show that the Airport (or any part thereof) is rated below the respective Objective Service Quality Requirement, the JVC will achieve the particular Objective Service Quality Requirement within 30 days of the last submitted quarterly report.

Should the JVC fail to achieve the above, or if the Airport (or any part thereof) continues to perform below the targets mentioned in Schedule 3, the JVC shall pay to the AAI 0.5% of the monthly Revenue (prior to default) for every month, that the standards are below any of the Objective Service Quality Requirements, for each such performance area, as liquidated damages provided however that the total liquidated damages payable hereunder shall not exceed 1.5% of the monthly Revenue (prior to default)."

9.53 The OMDAs for these airports (under the clause 9.1.3) provide that in the event of default vis-à-vis set subjective service quality standards:

"The JVC shall at all times during the Term hereof make best endeavours to ensure improvement of the Airport in the IATA/ACI AETRA passenger surveys. After the completion of Stage 1, the Airport target rating shall be 3.5; provided however that after the completion of Stage 2, the Airport target rating shall be 3.75. The target rating of 3.5 on the IATA/ACI AETRA

passenger surveys after the completion of Stage 1, and 3.75 after the completion of Stage 2, as furnished in the report as per sub-clause (b) above, is hereinafter referred to as "Target Rating".

At any time after the completion of Stage 1 or Stage 2, in the event that two successive quarterly IATA/ACI AETRA passenger surveys show that the Airport is rated below the applicable Target Rating, then the JVC shall pay to the AAI 2.5% of the monthly Revenue (prior to default) for every month that the standards are below the Target Rating by more than 0.1 points and 1.25% of the monthly Revenue (prior to default) for every month in the event the standards are below the Target Rating by less than 0.1 points, as liquidated damages; provided however that the maximum period that liquidated damages shall be paid hereunder shall not exceed a period of 6 months."

9.54 In case of BIAL and GHIAL, the concession agreements do not explicitly set out the extent of penalty but require airport operator to develop action plans for improvement, if the target rating of 3.5 with respect to subjective quality of service assessment is not achieved. Under the agreements, the Government of India reserves the right to levy liquidated damages in case of consistent lower than target rating after 4 consecutive surveys in discussion and agreement with the parties. However, clause 9.2.9 of the concession agreements provide:

"*From the date the IRA* (independent regulatory authority) *has power to review, monitor and set standards and penalties and regulate any such related activities at the Airport, (the airport) shall be required, instead of the provisions of Articles 9.2.1 to 9.2.7, to comply with all such regulations framed by IRA.*"

9.55 For Cochin and other major AAI airports, there is no explicit provision for under-performance resulting in penalties or linkages to tariff.

9.56 In the international context, at London Heathrow and Gatwick airports, up to 7% of airport (aeronautical) charges are at risk for under performance with respect to specified quality of service benchmarks. CAA in its price control decision also highlighted the fact that there is a judgement to be made in setting rebates which are sufficiently high to influence management's performance. At Dublin airport, the service quality benchmarks are specified with 4.5% of airport (aeronautical) charges at risk per annum, with associated rebates linked to level of performance.

9.57 In light of the international experiences, existing service quality arrangement in India and consultation responses, the Authority believes that a mechanism that specifies reduced tariff (operationalised in the form of rebates) for under-performance vis-à-vis specified benchmarks on quality of service would be the most appropriate option to adequately protect the interest of the users. Under

such a mechanism, the calculated rebate level for a year will need to be passed on to users of airport services in the form of reduced airport (aeronautical) tariff in the following year(s) (by introducing a 'quality term' in the yield calculation year on year as discussed later in this document).

9.58 The Authority proposes that under-performance with respect to specified benchmark for each objective parameter will have a monthly rebate incidence of 0.5% of aeronautical revenue, subject to an overall cap of 1.5%. The Authority also proposes that under-performance with respect to specified benchmark for each subjective parameter will also have a monthly rebate incidence of 0.5% of aeronautical revenue, subject to an overall cap of 2.5%.

9.59 For DIAL and MIAL, specifically, the rebates have been set out in OMDAs in form of penalty payments to AAI. The Authority will consider the effect of such agreements on it approach for these airports before determining tariffs for the first tariff cycle.

Implementation

9.60 This section intends to provide guidance to the airport operator in operationalising the quality of service measurement mechanism enunciated above.

Quality of service measurement mechanism

9.61 While the Authority has established the quality of service parameters to be measured, associated minimum benchmarks to be achieved and the level of rebates payable in case of under performance, it is expected that the airport operator will develop a comprehensive performance measurement plan to operationalise it. The performance measurement plan will need to be developed and submitted as part of the tariff proposal for approval of the Authority as per the guidance provided below.

9.62 An important issue to address while measuring quality of service under specified parameters is to provide clear definitions of measures including the frequency of measuring and information sources to be used. The table below outlines the implementation guidelines to be followed.

Exhibit 8: Quality of Service Measure and measurement mechanism

Service Parameter	Measures	Monthly Measurement Mechanism	Monthly Measurement Frequency & Data Source
Subjective Parameters			
Benchmarking of Service Quality through ACI ASQ survey as per the list of subjective parameters	Passenger survey rating on the standard ASQ survey compared against the target rating	As per the ACI ASQ Methodology	As per the ACI ASQ Methodology
Objective Parameters			
Airside Facilities & Services			
Parking Bays	% time available	The available time to be measured for each parking bay, using actual operational hours as percentage of total operational hours in a month excluding planned maintenance time.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
Aerobridge (PBB)	% of aircraft movements served to meet airline request	Number of aircraft movements for which aerobridge request was met as a percentage of total number of aircraft movements for which aerobridge request was made	For the duration of airport operational hours each day. Data used to be based on objective data sources.

Service Parameter	Measures	Monthly Measurement Mechanism	Monthly Measurement Frequency & Data Source
Terminal Services & Facilities			
Handling of Complaints	% of complaints responded within specified time	Total number of complaints where difference between time of complaint to first response is within the set standard as a percentage of total complaints received. The complaints covered shall include complaints received via mail or complaint/suggestion register or e-mail.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
Response to Phone Calls	% of calls answered within specified time	Number of calls answered by airport manager/ information help desk within the set standard as a percentage of total calls received.	Random calls on selected days as per third-party sampling. Data used to be based on independent/ third party assessment.
Availability of Flight Information	% time available	The available time to be measured for each FIDS, using actual operational hours as percentage of total operational hours in a month excluding planned maintenance time.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
Escalators, Lifts & Travelators	% time available	The available time to be measured for each Escalators, Lifts & Travelators, using actual operational hours as percentage of total operational hours in a month excluding planned maintenance time.	For the duration of airport operational hours each day. Data used to be based on objective data sources.

Service Parameter	Measures	Monthly Measurement Mechanism	Monthly Measurement Frequency & Data Source
Automated Services	% time available	The available time to be measured for each Automated Services, using actual operational hours as percentage of total operational hours in a month excluding planned maintenance time.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
Repair completion time	% of high priority complaints within specified hours	Number of high priority complaints where time of reporting the complaint to time of complaint closure is within set standard as a percentage of total number of high priority complaints received.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
	% of other complaints within specified hours	Number of non-high priority complaints where time of reporting the complaint to time of complaint closure is within set standard as a percentage of total number of high priority complaints received.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
Baggage Trolleys	% time available	Baggage trolleys available at designated locations should not fall below minimum 20 and meet the set standards.	For duration of all busiest hours in the month. Data used to be based on independent/ third party assessment.

Service Parameter	Measures	Monthly Measurement Mechanism	Monthly Measurement Frequency & Data Source
Facilities for Disabled Passenger	% time availability of wheel chairs	Number of wheel chair requests where time of request to time of request closure is within set standard as a percentage of total number of wheel chair requests. The time of request closure shall be the time when wheel chair has been handed over.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
	% time availability of assistance for disabled	Number of request for assistance where time of request to time of request closure is within set standard as a percentage of total number of request for assistance. The time of request closure shall be the initiation time of assistance.	For the duration of airport operational hours each day. Data used to be based on objective data sources.
Security Check	Waiting time in queue	Number of passengers where Average Queuing Time is within set standard as a percentage of total passengers in the queue. The Average Queuing Time and performance percentage to be calculated as described in Note 4 & 5. The measurement to be done for all queues.	For duration of all busiest hours in the month. Data used to be based on independent/ third party assessment.

Service Parameter	Measures	Monthly Measurement Mechanism	Monthly Measurement Frequency & Data Source
CIQ	Checking time in queue	Number of passengers where Average Queuing Time is within set standard as a percentage of total passengers in the queue. The Average Queuing Time and performance percentage to be calculated as described in Note 4 & 5. The measurement to be done at all queues.	For duration of all busiest hours in the month. Data used to be based on independent/ third party assessment.
Check-In	Maximum queuing time	Average Queuing Time to be calculated as described in Note 4 & 5. The measurement to be done at all queues.	For duration of all busiest hours in the month. Data used to be based on independent/ third party assessment.
Baggage Delivery	Time taken for bag delivery from aircraft arrival	Average time taken for baggage delivery from aircraft on-blocks time to first bag on baggage belt. Average time taken for baggage delivery from aircraft on-blocks time to last bag on baggage belt. The same measurement mechanism shall apply for Domestic and International baggage delivery.	For all flights during the duration of airport operational hours each day. Data used to be based on objective data sources.

Service Parameter	Measures	Monthly Measurement Mechanism	Monthly Measurement Frequency & Data Source
Passenger Arrival (International)	Time taken from aircraft arrival to kerbside	Average time taken by sample of arriving passengers from on-blocks time to arrival exit gate. The sample and assessment methodology to be approved by the Authority.	For duration of all busiest hours in the month. Data used to be based on independent/ third party assessment.
Passenger Arrival (Domestic)	Time taken from aircraft arrival to kerbside	Average time taken by sample of arriving passengers from on-blocks time to arrival exit gate. The sample and assessment methodology to be approved by the Authority.	For duration of all busiest hours in the month. Data used to be based on independent/ third party assessment.

Notes:

1. Availability of relevant facilities is defined for element i in month j as:

$$Availability_{ij} = 100.\left(1 - \frac{\sum_{k=1}^{n} U_{k,j}}{n_i.T_j}\right)$$

Where:

$Availability_{ij}$ is the percentage availability of element i in month j;

n_i is the total number of assets included in element i;

k denotes a specific asset included in element i such that k=1,2,…,n

$U_{k,j}$ is the time that asset k is unavailable in month j in periods

T_j is the total relevant time in month j as defined

2. Airport Operational Hours for the purpose of measurement will be the approved operational hours in the performance measurement plan and performance shall be measured during all such hours.
3. Busiest Hour of the day shall be defined by the airport operator taking into consideration factors like passenger forecasts and flight schedules. The busiest hour of the day shall be defined and identified in the performance measurement plan to be submitted by the airport operator.
4. Average Queuing time for security check, CIQ and Check-in shall be calculated as follows:

   For each month the peak hour time over which performance shall be measured is divided into "15 minute time intervals" beginning xx:00, xx:15, xx:30 and xx:45 in the respective hour;

   For each "15 minute time interval", the average queuing time shall be calculated as:

   "Average Queuing Time" = ATP / PPM

   Where:

   PPM[19] average number of passengers per minute leaving the queue in the 15 minute time interval;

   ATP[20] is the average number of passengers in the queue in the 15 minute time interval.
5. The performance percentage figures for set standard shall be calculated by:

   a) Identifying how many passengers in the month were processed in a time interval where the measured average queue time is less than set standard;

   b) Adding these respective numbers to the number of passengers who were processed in other 15 minute time interval in the month where the measured average queue time is less than set standard; and

   c) Then dividing these figures by the total number of passengers passing through queue in that month's busiest hours and expressing percentages.
6. Objective Data Sources shall be identified as records maintained by airport operator for the purpose of recording data in log books or electronic form e.g. IT systems.
7. Automated Services shall include following items:

[19] Calculated by measuring the exit numbers through the security arches every 60 seconds.

[20] Calculated by measuring the number of people in the queue every 60 seconds

a. Inbound Baggage Systems
b. Outbound Baggage Systems
c. X-Ray Machines
d. Public Announcement Systems

8. Repair completion time for high priority complaints will include repair of following items:
   a. Escalators
   b. Passenger Lifts
   c. Inbound Baggage Systems
   d. Outbound Baggage Systems

Complaints for repair of all other items will be categorised under other complaints.

Rebate Mechanism

9.63 While linking the performance of operators vis-à-vis the specified standards to the level of tariff, the calculated level of rebate for the year will be adjusted in the allowable yield, as described later in the Section on Form of Price Control.

9.64 For each relevant month j the Monthly Rebate % (for both Objective and Subjective) shall be calculated as follows:

$$MRO_{\,j}\,\% = \sum Min\,[\,1.5,\; P_i\,.X_{i,j}]$$

$$MRS_{\,j}\,\% = \sum Min\,[\,2.5,\; P_i\,.X_{i,j}]$$

Where

P_i is the maximum rebate percentage per month for each parameter i

$X_{i,j}$ = 0 if monthly standard i in month j is achieved

= 1 otherwise

Audit and Publication of performance measures

9.65 Airport operator will provide quarterly reports to the Authority on the measurement of performance standards, both objective and subjective. The Authority will publish the performance reports, airport wise, through its website, on a quarterly basis.

9.66 Airport operator shall also maintain records of the actual quality of service and rebates made in such a form that performance could be independently audited against the objective and subjective standards defined by the Authority.

10. NON-AERONAUTICAL REVENUE

10.1 The forecast of non-aeronautical revenue is a key component in the derivation of target revenues under the single till. It will, therefore, be necessary for the Authority to take a view on airport forecasts of non-aeronautical revenue, which will be closely linked to airport proposals and forecasts for traffic, capital investment and operating costs.

10.2 Given the relatively low levels of non-aeronautical revenues in the Indian context, compared to international standards, the Authority recognizes the importance of incentives for growth of non-aeronautical revenues, which was raised as an important issue in submissions in response to the White Paper.

International approaches to forecasting non-aeronautical revenue

10.3 In other single till regimes, internationally, the approach to forecasting non-aeronautical revenues has been for the regulator to review the forecasts submitted by the airport and the underlying assumptions, in detail. In some instances further studies have been commissioned to assess the commercial potential. For example, in its review of Stansted airport the UK CC commissioned a study by property consultants to assess the commercial potential. Following this study, the CC adjusted the forecasts of commercial revenue to include the recommendations of the consultancy study for areas where further commercial revenues could be developed. The Irish CAR, in its recent review, projected non-aeronautical revenues on a top-down basis using statistical relationships with key commercial revenue drivers, although it had commissioned detailed reviews of the airport's commercial potential in its previous review.

The Authority's approach to forecasting non-aeronautical revenue

10.4 The Authority's approach to forecasting non-aeronautical revenues will be to review in detail the bottom-up projections of airports, in conjunction with the review of other forecasts for operating costs and traffic and capital investment plans relating to non-aeronautical investments. The Authority will also take into account user views and relevant user consultation responses and procure expert studies, where required, to assess commercial / real estate potential. Further, the Authority would reserve the right to determine the final forecast to be used for the determination of tariffs taking into account any further evidence, which may be available/ made available.

11. FORM OF PRICE CONTROL AND TARIFF STRUCTURE

The White Paper

11.1 The Form of Price Control and Tariff Structure section of the White Paper outlined a range of issues relevant to the mechanics of price control:

- Whether the primary price control should be applied at a detailed level or at an aggregate level;
- If the latter, what, if any, control, approval or monitoring mechanism applies over the detailed tariff components of the control;
- The role and treatment of pre-funding (including the question of inter-period price profiling) and its relationship with price control;
- The process for monitoring compliance with the price control, including the need for 'error correction' for under or over-recoveries of the price control.

Submissions in response to White Paper

Detailed or Aggregate

11.2 DIAL and GHIAL argued that a control applied at an aggregate level would give airports the scope to propose tariffs that reflect changing circumstances, improve pricing efficiency and send pricing signals that would create benefits overall, for example to encourage transfer traffic.

11.3 APAO expressed the opinion that the airport operator should have the flexibility to set tariffs within an aggregate price control, including the flexibility to determine the allocation between passenger and airline charges.

11.4 FIA argued for detailed tariff level control by AERA to avoid cross-subsidisation problems. FIA also argued for greater transparency in the itemization of charges to describe what costs they relate to or what they will be applied to.

11.5 Air India Charters indicated a preference for an aggregate basis for control.

11.6 IATA accepted the aggregate basis, but recommended that detailed tariffs be only determined after consultation.

Decomposing Overall Control

11.7 No material issues were raised by respondents.

Pre-funding

11.8 Fraport AG argued that pre-funding can be facilitated with an increase in charges, as has been practiced by the CAA in respect of Heathrow airport.

11.9 GHIAL stated that the use of Development Fees should not be considered as the "last resort" but rather a useful tool in the funding kit of airports considering the huge capital needs in this sector.

11.10 FIA highlighted an issue relating to Development Fees at certain concession airports where companies would have a strong incentive to raise such fees to reduce the annual fee payable to AAI under the agreements and also to reduce tax liabilities.

11.11 ASSOCHAM indicated a preference for a framework that permitted gradual increases in charge levels rather than steep jumps in prices.

11.12 IATA is opposed to pre-funding except as an absolute 'last resort' as it contradicts with the 'user pays' principles and is unfair to those airlines or passengers paying for it.

Monitoring compliance

11.13 No material issues were raised by respondents.

The Authority's position on aggregate or detailed basis of control

Aggregate or detailed

11.14 The Authority notes that the majority of respondents signalled a preference for an aggregate basis of control and DIAL & GHIAL, in particular, supported its views with an economic argument for greater flexibility to permit more efficient pricing structures.

11.15 The Authority considers that the existence of an aggregate price cap ensures that users in general, taken together, are protected and that the incentives for the company to distort prices are likely to be second order. It can be argued[21] that a regulated company subject to an aggregate price cap has a benign incentive to improve the efficiency of price signals to minimise distortions that would have the effect of encouraging use of under-priced services and discouraging use of overpriced services, which would tend to increase the

[21] For example, the role of pricing flexibility in encouraging efficient pricing structures is well documented on the CAA website, for example see 'Pricing Structures and Economic Regulation – Consultation Paper', March 2001

company's costs. In due course, after the following price review, such additional costs would be to the disadvantage of users.

11.16 The Authority considers that airports having such an incentive-based flexibility in tariffs will encourage benign innovation, which is likely to lead to more efficient tariff structures than would arise from a more intrusive regulatory approach. The Authority also believes that the potential benefits from giving airports the flexibility in setting tariffs, in detail, under an aggregate price cap are likely to exceed the potential for a detriment.

11.17 Nevertheless, the Authority acknowledges the concerns expressed by FIA and considers that its approach to decomposing the control, as explained below, would address the same.

Yield or tariff basket

11.18 The White Paper identified the need to choose between a yield and a tariff basket approach. Although the Authority has considered adopting a tariff basket approach and is aware of some of the arguments in its favour, the White Paper identified a difficulty in implementing a tariff basket approach, that it does not readily permit the introduction of new tariffs and so may be most useful where tariff structures are relatively stable. The Authority considers these conditions do not exist in India.

11.19 The White Paper identified passenger numbers as a leading candidate for the basis of the yield. The passenger yield basis has been used by a number of airport regulators for many years. No respondent suggested an alternative basis.

Integrity of the scope of control

11.20 Another important reason for adopting an aggregate form of control on a yield basis relates to how the scope of control can be defined.

11.21 The Authority considers that an important purpose of price control is to avoid exploitation of an airport's monopoly power to raise revenues. It is, thus, desirable for the method of price control to capture the effect of all revenues that relate to that monopoly. Under an aggregate yield basis of control, the mechanism for monitoring compliance with the control is also aggregate in nature and requires a systematic allocation of the airport's total revenue, deducting from the total those revenues that do not relate to that monopoly. The composition of the revenues deducted can be readily monitored to ensure that the integrity of the control is not lost by the inclusion of monopoly revenues in that deduction.

11.22 The residual of that allocation will be subject to the overall yield cap. This approach protects users by limiting the total amounts they are charged in respect of their use of the airport's essential facilities provided on a monopoly basis. The regulated aeronautical tariffs can be determined at levels consistent with maintaining the appropriate overall level of income. In particular, an aggregate yield basis of control protects users in the event that the airport introduces any new kind of charge or levy that relates to its core monopoly services. The Authority would not have anticipated such a revenue type at the time of the last review and would not have defined a specific control for it. It would, thus, fall outside the scope of a non-aggregate control. The Authority considers this would undermine the integrity of the control and be to the detriment of users.

Conclusion

11.23 The Authority concludes that it will operate an aggregate basis of control on a passenger yield basis.

The Authority's position on decomposing tariffs under the control

11.24 The Authority acknowledges the concerns expressed by FIA, in its response to the White Paper, that an airport with flexibility to set tariffs under an overall price cap could introduce cross-subsidies. Although the Authority considers that it would not generally be in the airport's interest to introduce undue cross subsidy, for the reasons explained above, it recognises that practice does not always reflect the theory and that the revenue yield approach can distort pricing incentives in some circumstances (e.g. as highlighted by the CAA[21]). FIA's concerns are, therefore, real. The Authority considers that it would be appropriate to address these concerns by laying down a framework for the approval, by the Authority, of detailed tariff proposals each year.

Passenger Service Fee

11.25 As noted in the White Paper, Rule 88 of the Aircraft Rules, 1937 prescribes:

> *Passenger Service Fee — The licensee is entitled to collect fees to be called as Passenger Service Fee from the embarking passengers at such rate as the Central Government may specify and is also liable to pay for security component to any security agency designated by the Central Government for providing the security service.*
>
> *Provided that in respect of a major airport such rate shall be as determined under clause (c) of sub-section (1) of section 13 of the Airports Economic Regulatory Authority of India Act, 2008.*

11.26 Passenger Service Fees (PSF) has been classified in the past with two components identified – a Security Component and a Facilitation Component.

11.27 The State Support Agreements for DIAL and MIAL provide for the Security Component (65% at the time of agreement) to be revised as per directions of the Government of India, whereas for the Facilitation Component (35% at the time of agreement) to be revised in accordance with provisions for determination of aeronautical charges in general.

11.28 The Concession Agreements for BIAL and GHIAL provide for the PSF chargeable by them to be inclusive of the cost of Security Expenditure and for the component of cost towards Security Expenditure to be revised as and when directed by the Government of India.

11.29 The coverage and use of the Security Component of the PSF has been, most recently, defined vide Circular No. 13028/001/2009-AS dated 08.01.2010 of the Ministry of Civil Aviation.

11.30 On the other hand, the coverage and use of the Facilitation Component of the PSF hasn't been defined. From the provisions for revision of the Component specified under the State Support Agreements for DIAL and MIAL, it can be inferred that the coverage could be analogous to other aeronautical charges.

11.31 As discussed earlier in paragraph 8.32 in the Section on Operating Expenditure, the Authority's approach will be to allow a pass through of mandated operating costs pertaining to security.

11.32 The Authority is also minded to consider determination of PSF to entirely cover such security related costs (and such costs alone) in the future. Any costs being defrayed in the past by the Facilitation Component will be considered for remuneration through other tariff components as may be proposed by airports and approved by the Authority. The PSF would, therefore, be adjusted in future to reflect actual security costs as per the guidelines laid down by the Government of India or any other authority on its behalf, and as reviewed by the Authority for appropriate evidence.

11.33 Above approach is intended to simplify the tariff structure and to facilitate easy implementation of the pass through of mandated operating costs pertaining to security.

User Development Fee

11.34 Rule 89 of the Aircraft Rules, 1937 prescribes:

User Development Fee — The licensee may

(a) Levy and collect at a major airport the User Development Fees at such rate as may be determined under clause (b) of sub-section (1) of section 13 of the Airports Economic Regulatory Authority of India Act, 2008;

(b) levy and collect at any other airport the User Development Fees at such rate as the Central Government may specify.

11.35 However, no methodology has been prescribed in the Aircraft Rules for determining the UDF.

11.36 The Concession Agreements for BIAL and GHIAL provide for levy of UDF "from embarking domestic and international passengers, for the provision of passenger amenities, services and facilities" and for the UDF to be "used for the development, management, maintenance, operation and expansion of the facilities at the Airport". [22]

11.37 Draft guidelines for determination of UDF issued by the Ministry of Civil Aviation in the past for discussions had noted that levy of UDF was to be considered only in cases and years where the Target Revenue of a major airport was projected to fall short of the Admissible Expenditure. Hon'ble High Court of Kerala, in its judgement in the case of Commissioner of Central Excise Vs. Cochin International Airport Ltd. [2009 (16) S.T.R. 401 (Ker.)], has noted that the purpose of UDF "*is to augment revenue*". Thus, UDF may be taken as a revenue enhancing measure to ensure economic viability of the airport operations.

11.38 Above indicates that broad intended coverage of UDF is analogous to other aeronautical charges. However, while the other aeronautical charges are levied on the airlines, UDF is recovered directly from the passengers.

11.39 Keeping in view the position that UDF and other aeronautical charges essentially cover the same range of services, the Authority feels that UDF levy for an airport may be considered as a revenue head to be permitted in specific cases upon due consideration. To illustrate, in case of recently operationalised Bangalore and Hyderabad airports, where large investments needed to be remunerated, such remuneration predominantly through aeronautical charges may have raised such charges to completely unacceptable levels for the airlines. Therefore, part of the remuneration is being allowed through a passenger based levy i.e. UDF. The Authority considers it prudent that UDF levy should be allowed for airports in future only in cases of like nature i.e. the cases where large lumpy investments need to be remunerated in the near future. It is felt that such an approach would also ensure a simple tariff structure. Any proposal for levy of UDF by airports would, therefore, need to be specifically substantiated with rationale for levying such a user specific charge as against the various other aeronautical charges possible.

[22] Levy of UDF for BIAL and GHIAL was approved by GoI in the past on an ad hoc basis

Conclusion

11.40 The Authority will require the following to be evidenced by the airport before approving detailed tariff proposals:

- That there is a reasonable expectation that the proposed tariffs will not lead to an over-recovery of the price control in the year;
- That the airport has consulted with users on its proposals and has reached a balanced proposal in the light of concerns raised;
- That any significant change in the balance of tariffs compared with the previous year is justified on cost-reflectivity grounds or other grounds consistent with the interests of users;
- That the airport has addressed any concerns raised by the Authority, in relation to the submissions made to the Authority by any of the stakeholders.

11.41 Also as discussed above, with respect to airports' tariff proposals to be submitted to the Authority, the Authority will require that:

(a) The Passenger Service Fee is proposed to cover only the expenses pertaining to mandated security component; and

(b) The User Development Fee is proposed as a revenue head to be allowed in specific case upon due consideration.

11.42 The Authority will expect the evidence submitted to be authoritative and may, if appropriate, request independent verification of the evidence. Once the Authority has examined the evidence, it will either approve the tariff proposals, or request further information from the airport or from users, or make an alternative determination, setting out its justification for the changes.

The Authority's position on scope and structure of control and monitoring compliance

11.43 There is a natural symmetry between the method of computing the revenue requirement for revenues subject to control at the time of a price cap decision and the method of monitoring compliance with a yield-based aggregate control.

11.44 The ultimate price control will be expressed as a formula incorporating the famous term 'Inflation-X'. In concept, the formula will be as follows:

$$Yield_{year=y} = Yield_{year=y-1} \cdot (1 + WPI - X) + K_{year=y}$$

where WPI[23] is the whole sale price index (a 10% WPI rate would be expressed as 0.1 in this formula), X is the price adjustment factor determined by the Authority at a price review and K is an error correction term that incorporates under and over-recoveries of the price control from previous years.

11.45 At the end of each year, the Authority will require the airport to submit a compliance statement setting out how it has complied with the price control formula and identifying the under or over-recovery for inclusion in future years' K terms.

11.46 The compliance statement will be supported by audited accounts of the airport company and other independently verified information. The Authority may require the statement itself to be subject to independent audit.

11.47 The statement will take the following broad form:

	Total revenues for the airport company
less	Commercial Revenues
less	Revenues subject to separate control
equals	Revenues subject to passenger yield cap
divided by	Passenger numbers
equals	Passenger yield
less	Allowed passenger yield determined by the price cap formula
equals	Over/under recovery for error term in control formula

11.48 **Total revenues for the airport company** will be supported by audited accounts and a clear description of any accounting policies that might be relevant to an understanding of the computation of that amount.

11.49 **Commercial revenues** will represent revenues from commercial activities, generally non-aeronautical, where services are non-essential and the airport does not have monopoly pricing power. The Authority will examine the constituents of this component to ensure that the nature of the revenues is consistent with the deductions that it made at the time of computing the price cap. Should there be revenue streams not anticipated at the time of setting the price cap, the Authority will require information about the commercial nature of the revenue stream and the services it relates to. The Authority will consider whether it is appropriate to exclude such a revenue stream from the

[23]This is consistent with the approach taken by TAMP in the ports sector. In the electricity sector, various weighted inflation indices have been used by regulators. However, the Authority does not feel such an approach is justified for the regulation of major airports.

price cap. Should there be a disagreement between the Authority and the airport, the Authority will set out the rationale for its position together with the airport's stated rationale in an ad hoc consultation to obtain the views of interested parties. The Authority will determine its position after considering responses to such a consultation.

11.50 There will be a strong correlation between revenues outside the scope of control and non-aeronautical revenues. However, there may be circumstances where the Authority considers that some aeronautical services are provided on a commercial, non-essential basis whose inclusion in the price control would undermine the airport's incentives to develop the commercial potential. Such circumstances may arise, for instance, if there is some competition from other airports. Equally, the Authority may consider that some revenues that the airport classifies as non-aeronautical nevertheless relate to the provision of essential airport facilities over which the airport has a monopoly.

11.51 **Revenue subject to separate control** could include regulated revenues where the Authority has determined that inclusion in a passenger yield-based control would not be appropriate. For example, at some airports it may be appropriate for the Authority to regulate cargo handling revenues on a tonnage yield or other basis rather than a passenger yield basis. Another example might be the component of the passenger service fee that relates to security costs, where the Authority has determined a cost pass-through basis for remuneration.

11.52 Passenger numbers should be an independently verified number.

Discounts

11.53 The Authority has considered whether the yield should take into account any unpublished discounts on aeronautical tariffs, where the airport reaches agreement with one or more airlines on a basis of charging that departs from the regulated tariff and is not offered to all airlines. In certain circumstances, an airport may consider that such an arrangement helps secure an airline's use of the airport and its active development of business at the airport. This could benefit users in general if it helps defray the fixed costs of the airport and thereby reduce tariffs at the following price review, compared with what they would otherwise have been.

11.54 However, the Authority considers it appropriate that such discounts should be reasonably transparent for them to be taken in to account in the allowed yield. The Authority would, therefore, look to the airport to provide evidence that it has informed users on the level of unpublished discounts and the strategic purpose of offering such discounts. Should users raise substantive concerns, the Authority would consider the issue on the basis of the evidence.

Sub-caps

11.55 The Authority considers that it may be appropriate to regulate certain revenues under sub-caps within the overall passenger yield. Examples might include user development fees and other passenger-based charges. Inclusion of these sub-caps within the aggregate price cap would ensure the integrity of the overall price control.

Quality terms

11.56 Earlier in this document, a rebate mechanism in relation to service quality has been described. The Authority will, thus, incorporate a rebate term within the control formula. The effect of the term will be to reduce the allowed yield for the year by the relevant rebate amount. The formula will be structured so that the rebate for one year will not affect the yield basis for subsequent years.

Traffic forecast error correction

11.57 The Section on Traffic Forecast, earlier in this document, refers to a traffic forecast error correction mechanism that effects adjustments to the allowed yield if outturn traffic levels diverge from the Authority's forecast by more than a prescribed margin. The control formula will be structured to incorporate such a mechanism.

Error correction

11.58 In practice, in any one year, there are many reasons for the actual revenue yield to differ from the allowed yield. For example, when tariffs are set, the mix of volumes for each class of tariff is not known. The control formula will, therefore, specify an error correction mechanism that carries forward any over-recovery in the yield to reduce the allowed yield in a subsequent year and, similarly, carries forward any under-recovery in the yield to increase the allowed yield in a subsequent year. The formula will be structured so that the error term carried forward to one year will not affect the yield basis for the following years.

Pre-funding

11.59 The Authority is cognisant of the ICAO's position on pre-funding. 'ICAO's Policies on Charges for Airports and Air Navigation Services' (Doc 9082/8) states that pre-funding of projects may be accepted in specific circumstances where this is the most appropriate means of financing long-term, large-scale investment, provided that strict safeguards are in place.

11.60 Those safeguards are:

i) Effective and transparent economic oversight of user charges and the related provision of services, including performance auditing and "benchmarking" (comparison of productivity criteria against other similar enterprises);
ii) Comprehensive and transparent accounting, with assurances that all aviation user charges are, and will remain, earmarked for civil aviation services or projects;
iii) Advance, transparent and substantive consultation by airports and, to the greatest extent possible, agreement with users regarding significant projects; and
iv) Application for a limited period of time with users benefiting from lower charges and from smoother transition in changes to charges than would otherwise have been the case once new facilities or infrastructure are in place.

11.61 The Authority considers that its framework for economic regulation will largely embody these safeguards. Nevertheless, the Authority considers that pre-funding is generally not supported by users and should, therefore, be a measure of last resort. Before permitting any pre-funding, the Authority will also require clear justification, after consultation with users, that pre-funding is in the long term interest of users.

11.62 Pre-funding could be achieved either by levying development fees on passengers or by adopting the approach the UK CAA's has used, for Heathrow, viz. accelerating regulatory depreciation in the computation of the price cap, as Fraport AG points out in its response to the White Paper.

11.63 The Authority is not persuaded that it would be appropriate to allow pre-funding through the price cap in the way the CAA has done in the UK as such pre-funding would be less transparent. Further, while the levy of Development Fee is statutorily provided for in the Airports Authority of India Act, 1994, there is no statutory backing to pre-funding through accelerated depreciation.

11.64 The Authority is conscious of the fact that at Delhi and Mumbai airports, development fees have been recently levied on all departing passengers and that these fees have been accounted for as capital receipts rather than as revenue.

11.65 The Authority is of the view that the introduction of or an increase in such a development fee during the course of a price control period could undermine the integrity of the price control for the reason that the price cap will be based on assumptions about the levels of net investment made by the airport and the levels of funding from equity and debt investors. The introduction of or increase in a development fee will, therefore, have a direct impact on those levels. Therefore a new levy or an increase in an existing levy of DF, during the course of a price control period, should not be introduced in the absence of a full reopening, or interim review, of the price cap itself.

Part III - Regulatory Philosophy and Approach in Economic Regulation of Air Navigation Services

1. CONTEXT

1.1 The Convention on International Civil Aviation (Doc 7300/9) provides for complete and exclusive sovereignty of each contracting State over the airspace above its territory and for each State to undertake provision of these services in accordance with the standards and practices recommended or established from time to time, pursuant to the Convention.

1.2 The White Paper outlined the statutory context for the provision of air navigation services (ANS), notably The Airports Authority of India Act, 1994 (AAI Act). The AAI Act grants the sovereign right to AAI to provide air navigation services at all the civil airports in the country, including civil enclaves and over relevant airspace, which covers the Indian land mass of 1.05 million square nautical miles and 1.75 million square nautical miles of oceanic area.

Submissions in response to White Paper

1.3 In response to the White Paper, the Airports Authority of India submitted that:

"*As per AAI Act, 1994, the responsibility of providing Air Traffic and Air Navigation Services in the country is assigned to AAI. As such, the cost incurred for providing TNLC (Terminal Navigational Landing Charges) and RNFC (Route Navigation & Facilities Charges) are not necessarily attributable to a particular airport/unit.*

In view of the above, single rate is to be fixed and levied uniformly at all the airports considering the total investment, revenue generated and recurring expenditure incurred for providing the services etc."

The Authority's Assessment

1.4 ANS is naturally a monopoly service. It is also a service essential to the safety of an aircraft while it is flying or moving on the ground. It is indisputable that safety is an imperative.

1.5 In the Authority's view, that safety imperative has important implications for the discharge of its functions in respect of ANS in as much as the Authority must ensure that its decisions do not and cannot compromise safety.

1.6 ANS remains a monopoly, however. The Authority's functions require it to consider the timely investment and improvement of facilities, the quality of the service provided, the cost for improving efficiency and the economic and viable operation of the service. Users have an interest in being protected from any detrimental monopolistic behaviour and in having transparency of cost and other information.

2. FORM OF REGULATION

2.1 As with the airports, the Authority has to determine a form of regulation appropriate to ANS. Since AAI is a monopoly provider of ANS, the Authority has considered adopting a price cap approach, comparable to the approach it outlines for airports.

2.2 A price cap would set a predetermined basis for limiting the revenues that AAI is able to recover. The purpose of doing this would be to structure economic incentives on the company to become more efficient, to outperform expectations, because its shareholders will benefit from the rewards of out performance and suffer the corresponding penalties of underperformance.

2.3 The Authority is clear that, in the case of airports, the economic incentives and the increased transparency of performance information associated with a price cap will have a beneficial effect on airport decisions by helping to condition and inform the internal governance arrangements of the businesses. In the case of airports with private shareholders, the price cap approach aims to harness shareholder interests towards furthering the interests of users. In the case of Government owned airports, there may be more emphasis on the price cap approach influencing governance through the increased transparency in performance.

2.4 In the case of ANS, however, the safety imperative has an important bearing on the approach. The Authority recognises that a predetermined basis for limiting revenues, for example predetermined estimates for levels of operating expenditure, can be perceived as internal targets. Concerns would arise if those predetermined estimates diverge from realistic target ranges that might appropriately motivate managers, so that managers are either unduly pressured, for example to save costs, or will feel able to tolerate inefficiency. Undue pressure to save costs could pose a real danger if it leads to savings on such cost items that compromise safety. A well developed performance management culture may be able to avoid this danger by developing appropriate internal targets on an annual or more frequent basis.

2.5 The Authority has made reference to other jurisdictions where ANS are subject to economic regulation. Notable among these is the UK's NATS, a partially privatised ANS provider. The Authority notes that NATS is subject to a carefully designed regulatory regime for a commercially run business that incorporates not only price cap provisions but also a licence regime that builds in important safeguards, including safeguards relating to the availability of financial resources. It is set in a context where the economic regulator also has responsibilities in relation to airspace policy and safety matters. NATS is operated on commercial lines and can be expected to have a well developed performance management culture.

2.6 The Authority considers that the conditions in India are significantly different in a number of respects and that it cannot prudently put in place a price cap regime. It does not, however, preclude the possibility of moving to a price cap basis in the future, but to do so the Authority would need to satisfy itself that there were adequate regulatory and governance safeguards in place to guarantee the safety imperative. It cannot do that, at present.

2.7 The Authority, therefore, considers it necessary to adopt a more explicit cost-based approach, namely a rate of return approach in respect of ANS.

2.8 The rate of return approach will permit AAI to recover actual net costs and a fair rate of return on its investment. To do this, it will determine tariffs for a regulatory cycle at a level that remunerates the aggregate of the forecast net costs and fair return for the cycle and the accumulated variances between costs and revenues from the previous cycle. However, in the given context, such determination may need to be reviewed on annual basis, as discussed in Section 4.

2.9 The Authority would expect to supplement this approach with:

- an expectation that AAI will take a proactive approach to user consultation and to transparency in the basis of ANS charges and the economic and service performance of ANS activities, and

- its own initiatives to establish guidelines or requirements or publish information that encourages consultation or transparency; and

- recognition that performance monitoring would continue to be undertaken by DGCA, as described hereinafter in paragraph 6.7.

3. COST RELATEDNESS OF ANS

3.1 It is understood that AAI, presently, maintains an integrated set of accounts for its ANS as well as airport service provision functions.

3.2 In order to determine ANS charges on a rate of return basis, the Authority will require high quality information on the costs and activities associated with delivering ANS.

3.3 To this end, the Authority will require AAI to prepare separate accounts covering the revenues, costs, assets and liabilities of ANS services, together with traffic volumes for the year relevant to RNFC, TNLC and other charges and information on the revenues broken down by charge type, identifying any rebates or other adjustments.

3.4 These accounts shall be prepared on an historical cost basis without any revaluations of assets and on a basis that they fairly present the revenues, costs, assets and liabilities reasonably attributable to the relevant services and shall be signed by Directors of AAI. The Authority may require such accounts also to be subject to independent audit.

3.5 It will require such accounts to set out and explain the basis of accounting for the costs of activities and facilities shared with other AAI functions, including its airport businesses. The Authority will expect AAI to adopt, at the least, the generally accepted accounting practices in respect of these costs and may require best practice approaches, such as activity cost accounting methods, if it considers it necessary to protect the interests of users.

4. FORM OF PRICE CONTROL

4.1 As discussed earlier in paragraph 2.8 of this Part of the Consultation Paper, the Authority will determine tariffs for the regulatory cycle at a level that remunerates the aggregate of the forecast net costs and a fair return for the cycle. However, the Authority would also not want a situation where variation of actual outturns, year-on-year, from predetermined estimates at the start of a regulatory cycle would put pressure on the management to save costs within a regulatory cycle.

4.2 Accordingly, as mentioned earlier, the Authority will review tariffs determined for the regulatory cycle on an annual basis. Such reviews will be based on annual compliance statements and tariff revision proposals that would need to be filed by AAI each year.

4.3 The compliance statement and tariff proposal will incorporate:

- The separate accounts referred to above in respect of the most recently ended financial year

- Financial forecasts for the current year and the year in respect of which tariffs are being proposed, prepared on a consistent basis with the separate accounts referred to above

- A computation of the regulatory asset value for each year, being the average of the value of net assets at the start and at the end of each respective year shown in the separate accounts (actual or forecast) multiplied by the assessed rate of return notified from time to time by the Authority following consultation, where such net assets shall include tangible fixed assets, including software and related development costs, and amounts receivable from or payable to external customers and suppliers of goods and services but shall exclude any amounts in respect of financial loans, bank accounts or amounts receivable from or payable to other parts of AAI or any related undertaking.

- A computation of the allowed return for each year, being the regulatory asset value for each year multiplied by the allowed rate of return notified by the Authority from time to time, which the Authority will assess after due consultation.

- A statement of the variance of returns for each year between:

    - the return shown in the actual or forecast separate accounts before interest and any other financing costs, but including taxation, for the forthcoming year, and

- the allowed return for the each year

- A statement of the accumulated return variances at the end of the most recently ended financial year, taking into account variances in respect of all prior years

- A statement demonstrating how AAI plans to ensure that any positive cumulative variances will be reversed in the foreseeable future.

- A statement of proposed tariffs for the forthcoming year.

- A statement demonstrating how the proposed tariffs are consistent with the revenues shown in the forecast separate accounts for that year.

4.4 For the purpose of computing the cumulative variance, AAI may aggregate any negative variances in present value terms, taking the fair rate of return as a discount rate, and must aggregate any positive variances in present value terms.

4.5 The Authority will require the following to be evidenced by AAI before approving its ANS tariff proposals:

- That AAI has consulted with users on its proposals, consistent with any security related requirements or as prescribed by GoI, and its proposals are balanced in the light of concerns raised. That any significant change in the balance of tariffs compared with the previous year is justified on cost-relatedness grounds or other grounds consistent with the interests of users

- That the company has addressed any concerns raised by the Authority, in relation to submissions to the Authority by any affected party or otherwise.

4.6 The Authority will expect the evidence submitted to be authoritative and may, if appropriate, request independent verification of the evidence. Once the Authority has examined the evidence, it will either approve the tariff proposals, or request further information from AAI or from users or make an alternative determination, setting out its justification for the changes.

5. FAIR RATE OF RETURN

5.1 The Authority will make its assessments of the fair rate of return for ANS in the light of the principles discussed in Section 3 part II in respect of airports but reflecting the circumstances of the ANS business and its regulatory regime.

5.2 An important feature of a rate of return regime is that it protects investors from risk. The regime secures that investors will earn a specified rate of return on investment. The actual rate of return earned is not affected by uncertainty in any forecasts as the regime ensures that investors are compensated for the effect of any variances.

5.3 This means that, under rate of return regulation, the risks that equity investors are exposed to are closely analogous to the risks that lenders are exposed to. Consideration of systematic risks that would normally inform the assessment of the beta relevant to the cost of equity would become a trivial exercise, as there should be no material systematic risk exposure.

5.4 The Authority would, therefore, be likely to consider the cost of equity for ANS investment under a rate of return regime with reference to the interest rate for analogous debt.

AAI-airline consultation

5.5 Paragraph 4.6 above noted that the Authority would have an expectation that AAI will take a proactive approach to user consultation.

5.6 The Authority considers that ICAO's Policies on Charges for Airports and Air Navigation Services is an important reference point for such consultation, together with Section E of Chapter 7 of ICAO's Manual on Air Navigation Services Economics. A further reference point would be the Consultation Protocol proposed to be established in relation to airport services, which may inform the expectations of ANS users regarding acceptable standards of consultation in the Indian aviation sector.

5.7 The Authority will expect to monitor the evolution of AAI's consultation arrangements with airline users with a view to assessing, after due consultation, whether the arrangements are acceptable to all parties concerned. If, after considering representations from interested parties, the Authority is concerned that those arrangements are not acceptable, it will consider what further steps it should take to ensure that a clearly defined, regular consultation process is established, in accordance with paragraph 25 of ICAO's Policies on Charges for Airports and Air Navigation Services (Edition 8).

6. QUALITY OF SERVICE

6.1 Under Article 37 (Adoption of International Standards and Procedures) of the Convention on International Civil Aviation, each contracting State undertakes to collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures, and organization in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation.

6.2 To this end the ICAO adopts and amends from time to time, as may be necessary, international standards and recommended practices and procedures dealing with air traffic control practices. In above respect, ICAO Annex 11 provides the Standards pertaining to the Air Traffic Services which are required to be adopted by the Contracting State.

6.3 The DGCA issues and enforces rules, regulations and minimum Standards relating to the operation of aircraft, the licensing and rating of personnel including the supervision and enforcement of medical standards, the operations specifications for commercial air operations, the surveillance of air operations, the operation of the air navigation system and the provision of Air Traffic Services (ATS).

6.4 Pursuant to the above mentioned convention, Civil Aviation Requirement (CAR) Section 9, Series 'E', Part I, issued by the DGCA under the provisions of Rule 29C and Rule 133A of the Aircraft Rules, 1937 provides requirements for the navigation of aircraft flying in or over India or of aircraft registered in India.

6.5 The CAR also provides for regulations and standards pertaining to various performance aspects of air traffic services like minimum flight altitude, safety management, air traffic services requirement for communications, etc.

6.6 Additionally, DGCA CAR Section 9, Series 'D', Part II, lays down the requirements of maintenance/ inspection of communications, Navigation, Landing and other equipment installed at airports and en-route and used for aircraft operations.

6.7 In this context, the Authority will rely upon the periodic reports and updates on the service performance standards monitored by DGCA and provide any inputs, as it may consider necessary, to the DGCA. An appropriate coordination mechanism would be evolved for receiving reports and updates from the DGCA.

Part IV - Regulatory Philosophy and Approach in Economic Regulation of Cargo Facility Operators, Ground Handling Operators and Fuel Farm Operators / Fuel Access Providers

1. OVERALL REGULATORY APPROACH

1.1 The Authority's functions in respect of major airports, inter-alia, include tariff determination for following aeronautical services as -

"*any service provided:*

(i) for ground handling services relating to aircraft, passengers and cargo at an airport;

(ii) for the cargo facility at an airport;

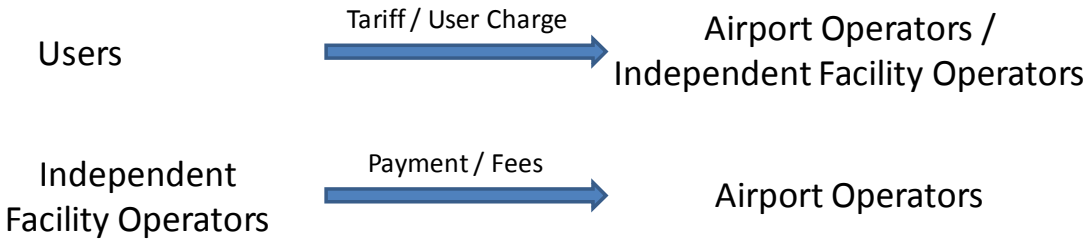
(iii) for supplying fuel to the aircraft at an airport.

1.2 With respect to services covered under points (iv), (v) and (vi) , broadly cargo facility operators, ground handling service providers and fuel farm operators / fuel access providers can either be the airport operators themselves or independent agencies / licensees.

1.3 Presently, various types of arrangements are understood to exist between airport operators and independent service providers. While certain agencies (like National Aviation Company of India Ltd) continue to provide services at certain major airports without formal agreements with the airport operators, certain agencies have been selected by airport operators through a process of competitive bidding. Further, while some agreements require such agencies to make payments to the airport operators with reference to their gross revenues, some require making payments based on the quantum of handling (cargo / fuel).

1.4 At a broader level, where the airport operators are responsible for operating such facilities / providing services, they charge users directly, and where such facilities are operated by independent agencies, such agencies charge users directly while making payments to airport operators (in terms of annual fee, revenue share, concession fee, license fee, common infrastructure charges, charges for utilities, etc.). The two types of charges / payments involved are represented in the exhibit below.

Exhibit 9: Types of charges / payments involved in provision of service pertaining to cargo facility, ground handling and supplying fuel



1.5 With respect to these charges / payments involved in provision of services pertaining to cargo facility, ground handling and supplying fuel, the Authority's regulatory approach is enunciated below.

Submissions in Response to the White Paper

1.6 The White Paper had noted that "there are cases where certain service providers (for providing ground handling and cargo facilities) operate under a commercial constraint (competition from other players). In such cases, economic regulation may not be required to mimic competition".

1.7 The Authority received general support for this statement from: Cargo Service Centre, FICCI, APAO, DIAL, GHIAL, Foundation for Aviation & Sustainable Tourism. However, IATA and FIA believe that all aeronautical activities outlined under the Act, where there is potential to exploit a monopoly position, should be regulated.

1.8 Blue Dart requested that "there should be safeguards against monopolistic price fixation". They supplemented this submission with the example of "increases in leases rentals at various airports", in the recent past. This submission seems to pertain to payments / fees to airport operators by relevant agencies.

Regulatory Approach to Payments / Fees to Airport Operators

1.9 Under Section 11 of Part II of this document, three broad components of total airport revenue were identified as follows:

(a) Commercial Revenues outside the scope of control representing revenues from (mainly) non-aeronautical commercial activities where the airport does not have monopoly pricing power and is subject to a competitive environment;

(b) Revenues subject to a separate control representing revenues that are not subject to a competitive environment and which are not included in the passenger yield cap; and

(c) Revenues subject to a passenger yield cap representing the total airport revenues reduced for the components listed above (potentially having a sub-cap for certain elements).

1.10 Payments required to be made by independent agencies operating cargo, ground handling, fuel farm / access facilities to airport operators (in terms of annual fee, revenue share, concession fee, license fee, common infrastructure charges, charges for utilities, etc.) would, primarily, represent revenues where the airport does have monopoly power and could therefore, at one level, be subjected to control.

1.11 However, it may be important to note here that the extent of such payments have been used in a number of cases as the basis of resolving a competitive process for selection of agencies. In fact, under AIC Sl. No. 7/2007 dated 28th September 2007 issued by the DGCA, it was specified that with respect to provision of ground handling services at metropolitan airports (i.e. the airports located at Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad) other than those belonging to the Airports Authority of India, any other ground handling service providers (other than the airport operators / its JV or NACIL / its JV) could be "*selected through* ***competitive bidding on revenue sharing basis by the airport operator*** *subject to security clearance by the Government and observance of performance standards as may be laid down by the airport operator*".

1.12 Above approach would need to be considered with specific reference to natural constraints at airports that would allow only a limited number of agencies to operate such facilities and provide associated services.[24]

1.13 In view of the above, the Authority would consider payments required to be made by independent agencies operating cargo, ground handling, fuel farm / access facilities to airport operators as part of the passenger yield cap calculation. This approach would:

(a) Eliminate the incentive for the airport operators to specify a high level of such payments, and

[24] In this context, it may be possible for alternative bidding frameworks to develop in future for selection of such agencies / facility operators involving, for example, competitive bidding based on least end user tariff, etc. This concept was recognised in the Electricity Sector vide the National Electricity Policy issued by the Government of India in 2005 which noted that – " Competition will bring significant benefits to consumers , in which case, it is competition which will determine the price rather than any cost plus exercise on the basis of operating norms and parameters. All efforts will need to be made to bring the power industry to this situation as early as possible, in the overall interest of consumers." Detailed guidelines for competitive bidding were also issued by the Central Government in this regard.

(b) Protect the interest of users, wherein, to the extent such payments impact associated charges, they reduce the allowed passenger yield determined by the price cap formula.

1.14 It is acknowledged that besides the charges determined pursuant to competitive bidding processes, certain charges could be set at the discretion of the airport operators (charges for utilities, common infrastructure charges, etc.). For the setting of such charges, the Authority will require the airport operators to ensure a non-discriminatory cost-related approach.

Regulatory Approach to Tariff / End User Charges

1.15 The Authority's approach to regulation of tariff / end user charges with respect to cargo facilities, ground handling, and fuel farm facilities / fuel access will comprise two key steps: materiality assessment and competition assessment.

Materiality Assessment

1.16 The Authority will seek to assess the materiality of the service to its users before deciding whether to regulate / determine tariffs for the service or not. The concept of materiality relates to whether the benefits of regulation would justify the costs of regulation. For example, where provision of the service or the associated financial impact on users is likely to be limited, the costs of economic regulation may outweigh the benefits. A reference point to such a materiality assessment is provided under the Act, itself, wherein the definition of 'major airports' is with reference to annual passenger throughput in excess of one and a half million.

1.17 The Authority is minded to assess the materiality of the services pertaining to cargo facility, ground handling and fuel farm / fuel access at individual airports before deciding on the form of regulatory oversight required vis-à-vis tariff determination.

1.18 The materiality assessment will consider aspects like:

(a) Analyses of revenues of the service as a percentage of the total airport revenues;

(b) Ownership objectives and considerations;

(c) Size and structure of the market served; and

(d) Any additional evidence provided by users.

Competition Assessment

1.19 As noted above in paragraph 1.6, where service providers operate under a commercial constraint (competition from other players), economic regulation may not be required to mimic competition.

1.20 Wherever the Authority is satisfied that a service is material, the Authority is minded to additionally assess competition with respect to levy of tariff / end user charges and as a starting point take into account the number of operators.

1.21 Where two or more operators are present, the Authority's starting position would be to presume a degree of competition that protects users' interests. Under a competitive scenario, the Authority would not seek to adopt an intensive form of tariff determination but rather a 'light touch' approach in terms of tariff approval based on broad level justification by the operators / service providers.

1.22 However, in such cases, if the Authority is provided with evidence suggesting that competition is ineffective, the Authority would consider such evidence and if satisfied resort to a more intensive form of tariff determination as discussed further below.

1.23 Such tariff determination would also be resorted to wherever the Authority up front assesses a lack of competition in provision of a material service.

Application of materiality and competition assessments to Airport Operators as cargo, ground handling, fuel access service providers

1.24 The Authority's approach on the form of price control and tariff structure for airport operators, discussed in Section 11 of Part II of this document, provides for consideration of revenues and regulation of tariffs as:

(a) Commercial Revenues outside the scope of control representing revenues from (mainly) non-aeronautical commercial activities where the airport does not have monopoly pricing power and is subject to a competitive environment;

(b) Revenues subject to a separate control representing revenues that are not subject to a competitive environment and which are not included in the passenger yield cap; and

(c) Revenues subject to a passenger yield cap representing the total airport revenues reduced for the components listed above (potentially having a sub-cap for certain elements).

1.25 Where airport operators are the providers of cargo facilities, ground handling services and fuel farm / fuel access, associated tariff and end user charges

would be regulated as part of the above mentioned framework. In such cases, materiality and competition assessment would inform the category in which such tariff / end user charges will be regulated.

1.26 Where the airport operator faces competition for such services, the tariff / end user charges will be considered as outside the scope of control (reducing the revenues subject to passenger yield cap). In absence of competition, where the services are not material and largely relate to service provision to passengers, revenues from such charges would be considered as part of the passenger yield calculation, potentially subject to a separate sub-cap. Where the services are material and do not relate to passenger activities, the associated charges could be subject to a separate control.

1.27 The Authority's specific approach to regulation of cargo facility operators, ground handling operators and fuel farm operators / fuel access providers with respect to tariff / end user charges is discussed in the following sections.

2. CARGO FACILITY OPERATORS

2.1 Cargo facilities at the airport provide services for handling of various categories of cargo (freight and mail) including general cargo, special cargo/shipment (perishable / express), general mail and diplomatic mail/cargo.

2.2 Typically, cargo facilities providing services for freight and mail handling include:

- Facilities for physical handling of export, transfer and import freight, related document handling, facilities for provision of customs procedures and implementation of any security procedure agreed between the parties or required by the circumstances;
- Facilities for warehouse services for physical handling of storage, retrieval and delivery of freight and mail with the essential equipment;
- Facilities for security services in respect of cargo and Mail include screening of freight and/or mail, physical examination of freight, holding of cargo and/or mail for variable periods and secure storage of cargo and/or mail.

2.3 Services at cargo facilities at major airports are provided either directly by airport operators or by their licensees (third party terminal operators). The charges levied by operators of such facilities include TSP Charge (Agent/Consignee), Unitization/ De-Unitization Charge (Airline), Trans-shipment Charges (Airline), Demurrage (storage beyond free period), etc.

2.4 Further, three main types of cargo facilities exist at major airports:

- General (EXIM) cargo facilities;
- Perishable cargo facilities; and
- Express cargo facilities.

2.5 Cargo facility operators at major airports may or may not be operating under a competitive environment and the following scenarios are conceivable:

- Cargo facility operated by the airport operator alone;
- Cargo facility operated by a single licensee (independent agency) of the airport operator;
- Cargo facilities operated by more than one entity – licensee(s) of the airport operator and / or the airport operator itself as one of the operators.

Submissions in response to White Paper

2.6 There were multiple submissions in response to the White Paper relating to economic regulation of cargo facilities. DIAL, GHIAL, Celebi, Centre for Air Space and Law, and APAO have noted that price regulation should occur in areas where monopoly power is exercised and not where a competitive or contestable market exists. They have noted that where competition exists in cargo handling, the ability of the operator to raise prices unreasonably is constrained and, thus, it may be appropriate to keep these services out of the tariff regulation as it is generally recognised that competition can be more effective than regulation at encouraging efficient outcomes. APAO noted that in certain cases agreements have, recently, been signed by airport operators with Cargo Service Providers and any review of the classification of this service would jeopardize the position of the concessionaires.

2.7 Cargo Service Center also notes that as per 'Policy on Airport Infrastructure' - "there will be total freedom for airport operators in the matter of raising revenue through non-aeronautical charges" and recent tenders for Greenfield cargo terminal were bid on the same basis. They further note that "each handling contract has in built service level agreement between the service provider and the airline customer with penalty clause for non performance" and that concession agreement between cargo operator and airports with concession agreements contains service quality provisions based on the airports' concession agreements.

2.8 Blue Dart notes that the term 'Cargo Facility' should encompass both the common-user as well as dedicated air express terminals and there should be safeguards against monopolistic price fixation. Blue Dart support a price cap approach with mechanisms to ensure no reductions in service quality.

The approach taken by other regulators

2.9 Neither the UK CAA nor the Irish CAR determines tariffs for cargo facilities. In the UK, cargo related charges are treated as 'non-regulated aeronautical charges' and are not included in the passenger yield.

Materiality Assessment

2.10 Cargo volumes in 2008-09 at major airports and as a percentage of the total cargo volumes in India are presented in the exhibit below. As can be seen, the top 6 cargo handling airports viz. airports as Mumbai, Delhi, Chennai, Bangalore, Kolkata and Hyderabad account for about 90% of total cargo volumes of the country.

Exhibit 10: Major Indian Airports and Cargo Volumes Handled

	2008 - 09 Cargo Volumes (MT)	**2008 -09 % of India Cargo Volumes**
Mumbai	529,938	31%
Delhi	426,263	25%
Hyderabad	54,245	3%
Bangalore	158,000	9%
Cochin	31,153	2%
Calicut	12,919	1%
Chennai	272,368	16%
Kolkata	88,048	5%
Pune	11,653	1%
Ahmedabad	23,003	1%
Trivandrum	31,584	2%
Goa	3,977	0%

Source: DGCA / AAI

2.11 Perishable export cargo is handled through independent perishable cargo centres at certain airports developed in certain cases with financial assistance from Agricultural and Processed Food Products Export Development Authority (APEDA).

2.12 Further, for handling express cargo, including couriers for international as well as domestic movement, dedicated as well as common user facilities have been created at major airports. For instance, at Delhi Airport, FedEx, DHL and Blue Dart have dedicated facilities while the Express Industry Council of India (EICI), representing a cross section of members drawn from international and domestic express companies and primarily aiming to protect and promote the common interests of Express Industry and its members, manages the Common User Express Terminal. The Authority is minded not to regulate dedicated (self-handling) facilities and is minded to take into account EICI's aims and objectives while considering the issue of regulation of Common User Express Terminals managed by it.

Competition Assessment

2.13 Consistent with the Authority's overall regulatory approach outlined above with respect to regulation of tariff / end user charges for cargo facilities, ground handling services and fuel farm / access facilities, the Authority proposes to presume a degree of competition wherever two or more cargo facilities are operational at airports. In such cases, the Authority proposes to approve tariffs based on submissions with respect to broad level justification by the operators. The Authority recognises that such competition assessment may be required for different types of cargo facilities (general, perishable, express) separately at different airports. The Authority will be open to receiving and considering evidence from users on whether or not the competition is effective.

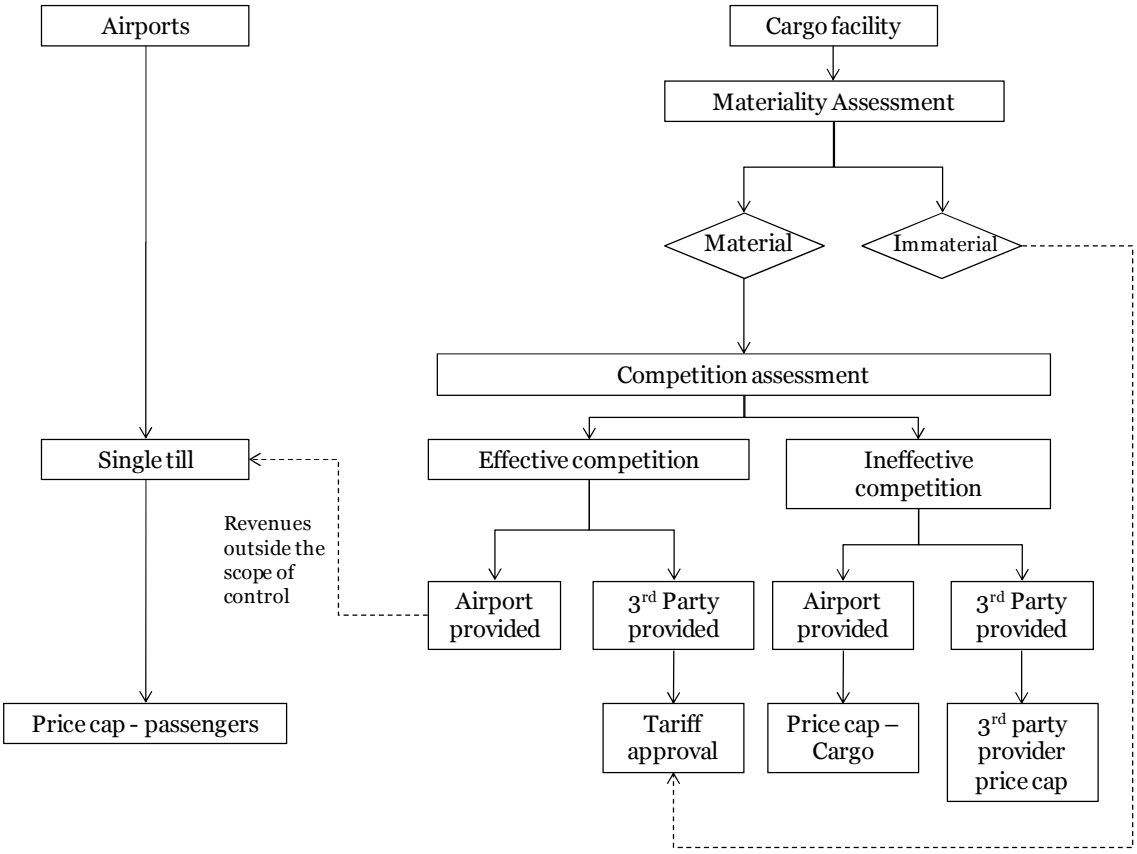
2.14 To the extent, the Authority has reasons to conclude lack of competition for material cargo facilities at airports, it would regulate tariff / end user charges. Where the airport operators operate such cargo facilities, cargo tariff would be regulated as part of the overall price cap framework discussed in Section 11 of Part II of this document.

2.15 Where independent agencies operate such cargo facilities, the Authority proposes to regulate tariff pursuant to a price cap approach on the lines of the approach enunciated for airport operators in general under Part II of this document while taking into account various specific factors relevant for such cargo facilities. In particular, the Authority is minded to encourage the process of user consultation. The Authority also recognises that safety related requirements for cargo facilities may be mandated by BCAS and is minded to consider the associated financial impact on cargo facility operations appropriately.

2.16 The Authority also recognises that cargo facilities at certain airports have been licensed to independent agencies by airport operators. In this context, Section 13 (1) (a) (vi) of the Act provides for the Authority to determine the tariff for the aeronautical services taking into consideration "*the concession offered by the Central Government in any agreement or memorandum of understanding or otherwise*". The Authority will take into consideration any concession / license agreements relevant to such cargo facilities to the extent pursuant to and as provided for under concession offered by the Central Government to the airport operators.

2.17 The Authority's overall approach to regulation of tariff / end user charges for cargo facilities is summarised in the exhibit below.

Exhibit 11: The Authority's approach to regulation of cargo facilities



2.18 As mentioned in Section 1 of this Part of the document, the Authority would consider payments required to be made by independent agencies operating cargo facilities to Airport Operators as part of the passenger yield cap calculation.

Quality of Service

2.19 The share of international and domestic cargo in the total cargo handled at major airports in the country is 70% and 30% respectively. While constituting the majority share of the total cargo handled at major airports in the country, international cargo processing involves comparatively higher complexities vis-à-vis domestic cargo processing.

2.20 The Operation, Management and Development Agreements between the Airports Authority of India and Delhi International Airport Private Limited and Mumbai International Airport Private Limited lay down a couple of objective service quality requirements (average dwell time for import and export of cargo in terms of maximum processing time of 24 hours). The subjective service quality requirements specified therein are with reference to

passenger services alone. The Memorandum of Understanding between the Airports Authority of India and the Ministry of Civil Aviation also provides for performance standards with respect to cargo processing times for export and import cargo.

2.21 International cargo processing at the cargo terminals at airports involves a set of activities performed by multiple parties and not all directly attributable to or under the control of cargo terminal operators. The growing volume of air cargo, extant goods clearance procedures (including documentation and communication requirements) have put an increased burden on air cargo terminals.

2.22 The biggest components of activities where cargo terminal operators have no direct control or significant ability to influence outcomes pertain to Customs clearance procedures vis-à-vis export and import cargo. Customs are responsible for critical control function with respect to international trade in conformance with the trade policies of the government. Further, air cargo terminals, as custodians of EXIM cargo, are also required to follow certain mandated procedures as per the circulars and notifications issued by CBEC and other regulatory agencies, from time to time.

2.23 There has been ongoing focus on the simplification of customs procedures towards streamlining of air cargo processing. Pursuant to the decision taken by the Empowered Sub-committee of the Committee on Infrastructure, Government of India, an Inter-Ministerial Group (IMG) was constituted under the chairmanship of Secretary (Revenue), Government of India for considering issues and suggesting measures for simplification of customs procedures at Air Cargo and Airports. The IMG consisted of representatives from Planning Commission, Civil Aviation and Commerce Ministries and Central Board of Excise & Customs. The IMG made a number of recommendations for implementation in this regard.

2.24 Further, authorities like the Director General of Foreign Trade (DGFT) and other regulatory agencies for plant & animal quarantine also have a key role in air cargo processing. DGFT is responsible for issuing various licenses and schemes pertaining to international trade promotion initiatives of the Government of India whereas other regulatory agencies are mandated to provide oversight to clearance of certain types of cargo.

2.25 Further, different business drivers for cargo terminals at different airports in terms of cargo-mix and requirements of cargo facility users (airlines, cargo agents and businesses) can impact the development and operation of cargo terminals differently. This may especially be relevant at airports where two or more cargo facilities are operational.

2.26 Based on the above, the Authority considers that there are significant interdependencies between activities performed by multiple parties at air cargo facilities. Even where an activity may be predominantly performed by one party, the time taken and service performance may still be dependent on the time taken and quality of service (as well as information) provided by other parties. Accordingly, the Authority considers that, presently, specification of any objective service quality benchmarks with respect to cargo facilities would not be feasible.

2.27 The use of subjective service quality assessment for cargo facilities may also be impacted by the aspects discussed above. Multiple touch points for users would make it considerably difficult to isolate and identifying the subjective service quality attributable to cargo terminal operators. [25]

2.28 Accordingly the Authority considers that linkage of service quality performance to tariff determination process would not be feasible under the first tariff cycle.

2.29 However, with respect to cargo facilities, the Authority will monitor the relevant performance standards as may be set by the Central Government or any authority authorized by it in this behalf.

[25] In this context, it may be noted that the potential impact of such interdependent and uncontrollable service areas on the performance of operators was sought to be excluded while specifying the subjective service quality requirements for airports at Delhi and Mumbai under their respective Operation, Management and Development Agreements. The agreements set out items as assessed to be under the reasonable control or influence of the operators and required that the relevant rating be computed based on the mentioned parameters.

3. GROUND HANDLING OPERATORS

3.1 Under AIC Sl. No. 7/2007 dated 28th September 2007 issued by DGCA, ground handling has been considered to comprise:

(a) ramp handling including activities specified at an annexure thereto;

(b) traffic handling including activities specified at an annexure thereto; and

(c) any other activity specified by the Central Government to be a part of either ramp handling or traffic handling.

3.2 Ground handling services at certain major airports are, presently, provided by more than one entity. Further, presently, airlines are also undertaking self handling to cater to their respective requirements. Ground handling service providers levy charges on airlines and when different from airport operators often pay a concession fee / revenue share to the airport operator.

3.3 In this context, it is important to note that Rule 92 of the Aircraft Rules, 1937 provides that:

"*The licensee shall, while providing ground handling service by itself, shall ensure a competitive environment by allowing the airline operator at the airport to engage, without any restriction, any of the ground handling service provider, who are permitted by the Central Government to provide such services. Provided that such ground-handling service provider shall be subject to the security clearance of the Central Government.*"

3.4 Further, DGCA's circular (referred above) on grant of permission for providing ground handling services at airports other than those belonging to the Airports Authority of India provides for:

(a) A minimum of two ground handing service providers at metro airports in addition to the subsidiaries of National Aviation Company of India Ltd. or their joint ventures; and

(b) airline operators, except foreign airline operators, to undertake self-handling in addition to the above at all other airports.

3.5 Similar provisions in respect of scope and entities permitted to undertake ground handling services at airports of the Airports Authority of India are specified under AAI's General Management, Entry for Ground Handling Services Regulations, 2007.

Submissions in response to White Paper

3.6 In response to the White Paper, APAO in its submission highlighted the reasons for keeping ground handling outside the ambit of regulation including:

- Existence of competition;
- Recent signing of agreements between ground handlers and airport operators.

3.7 FIA and IATA supported the regulation of ground handling.

The Authority's Approach

3.8 Under the overall approach enunciated earlier in this Part, given the competitive environment that currently exists for ground handling, the Authority would not expect to set tariffs / end user charges for ground handling, unless there is clear evidence provided by users that there is ineffective competition. The Authority will, instead, expect ground handling agencies to submit prices for approval.

3.9 Ground Handling contracts between airline users and service providers are commonly supported by explicit Service Level Agreements (SLAs). These SLAs are outcomes of commercial negotiations which reflect the operational requirements of the airlines. These SLAs, in practice, provide safeguards to the airline users against under-performance or service levels that do not meet their requirements.

3.10 In the above context, the Authority considers the market based mechanism for addressing service quality concerns in the form of SLAs as reasonable. However, the Authority will monitor the relevant performance standards as may be set by the Central Government or any authority authorized by it in this behalf.

4. FUEL FARM OPERATORS / FUEL ACCESS PROVIDERS

4.1 Section 2 (a) (vi) of the Act covers 'any service provided for supplying fuel to the aircraft at an airport' as an 'aeronautical service'.

4.2 Services for supply of fuel to aircraft through common facilities are, presently, being provided at certain airports with such facilities also being contemplated at certain other airports.

4.3 These facilities are available for use by various players on paying access fees / charges. In this context, the White Paper noted that the OMDA between AAI and DIAL (Schedule 5), for example, covers services pertaining to "common hydrant infrastructure for aircraft fuelling services by authorised providers" as an aeronautical service.

4.4 The tariff determination for service provided for supplying fuel to the aircraft in such cases could relate to the tariff / user charges for use of common access facilities.

4.5 However, at a number of airports, the supply of fuel to aircraft takes place through fuelling vehicles. In this context, tariff determination for service provided for supplying fuel to the aircraft could relate to tariff / charge pertaining to access to airside infrastructure.

Submissions in response to White Paper

4.6 Responses to the White Paper on this aspect were received from Indian Oil Skytanking Limited, IATA and FIA. Indian Oil Skytanking Limited, as the Fuel Farm Operator and Intoplane agent for storage and delivery of ATF at Bangalore International Airport does not support regulatory oversight over their operations on the basis that there was a competitive tendering process for the concession at BIAL. IATA and FIA believe that all aeronautical activities outlined under the Act, where there is potential to exploit a monopoly position, should be regulated, including fuel supply.

The Authority's Approach

4.7 The Authority recognises that the fuel facilities market is evolving, with varying positions across airports in terms of enhanced common access facilities being contemplated by some airports, varying degrees of competition, etc.

4.8 Consistent with the overall regulatory approach enunciated under Section 1 of this Part of the Consultation Paper, the Authority will approach the issue of tariff determination differently for:

(a) access to airside infrastructure; and

(b) for use of common access facilities.

4.9 The Authority will consider revenues to airport operators from aviation related fuel access (to airside infrastructure) charges as part of passenger yield cap calculation. This mechanism, as discussed earlier, will provide for protection of users' interest wherein the passenger yield determined by the price cap formula will take into account the extent of such payments.

4.10 In the case of material common access /fuel farm facilities, if the facilities are provided by the airport operator and operated by a licensee (as in case of GHIAL), the Authority will regulate the tariff / end user charges as part of the passenger yield cap determination while reviewing and determining any payment required to be made to the licensee in terms of operating costs and / or Operator Fee, etc. In this context, the Authority will take into account any relevant agreements between the concerned stakeholders. For example, at GHIAL, the operation and maintenance of the Aviation Fuel Facility is undertaken by a third party acting as the Operator (Reliance Industries Limited). The Operator is solely responsible for collecting all revenue including Throughput Charges, Infrastructure Recovery Charges and depositing in GHIAL's bank account. GHIAL is to then reimburse the Operator operating costs as well as pay an Operating Fee in consideration of the Operator agreeing to provide the Operation & Maintenance services.

4.11 In case the material common access /fuel farm facilities are provided as well as operated by a licensee, the Authority will take into account the structure and agreements between the airport operator and fuel facility provider. And where the material common access /fuel farm facilities are provided as well as operated by the airport operator, the Authority will regulate the tariff / end user charges as part of the passenger yield cap determination.

4.12 In conclusion, the Authority proposes that economic regulation with respect to fuel farm (common access facility) operators / fuel access providers would be undertaken on an airport to airport basis, in line with the framework outlined above.

4.13 The Authority observes that the service provision at airports would be largely dependent on infrastructure access and related procedural aspects. In situations where common infrastructure for fuel supply is provided by the airport operator or a third party service provider, the access and related procedural aspects are likely to be governed by commercial contracts entered between service provider and users of the facility. In the other situations where there is no common fuel supply infrastructure, each fuel supply company typically enters into commercial contracts with the airport operators, which include conditions relating to infrastructure availability and procedural aspects.

4.14 In view of the above, the Authority considers that quality of service aspects relating to access to airside / fuel supply infrastructure would be adequately covered under commercially negotiated contracts between users and service providers. However, the Authority will monitor the relevant performance standards as may be set by the Central Government or any authority authorized by it in this behalf.

4.15 Also, if the Authority receives any evidence from users contrary to the above assessment at any specific airport, the Authority will appropriately consider such evidence and specify any measures it may consider necessary.

Part V – Summary of Positions

1. SUMMARY OF POSITIONS

1.1 This Consultation Paper has listed the major issues impacting formulation of the Regulatory Philosophy and Approach of the Authority and lays out the Authority's rationale for the positions / approach it is presently minded to take.

1.2 While this Paper needs to be considered in its entirety for an appreciation of the issues as well as the Authority's position thereupon, this section presents a broad summary of positions that the Authority is minded to take on key issues.

Regulatory Objectives

1.3 The Authority is considering to set for itself following objectives, by which it will be guided, while discharging its functions under the Act:

- Facilitating wider policy aims for the aviation sector through the regulation of major airports, recognising their role in the sector and economy;

- Protecting and promoting the interests of existing and future users of major airports and air navigation services through provision of quality services commensurate with the respective tariffs/ charges, keeping in particular focus the interests of passengers and cargo facility users and the user expectations;

- Promoting investment in airports and air navigation services and their effective management so that all reasonable demands for airport services are met efficiently.

(Ref. Part I, Section 3, Para 3.6)

1.4 The Authority will operationalise these broader regulatory objectives through the following three key parameters:

- Viable operations of airports in terms of maintaining investor confidence of a fair rate of return on 'net investment' in those airports. For this purpose it will attempt to incentivise efficient airport investment and operations while ensuring their fair remuneration.

- Specification of a framework and qualitative and quantitative parameters to ensure that the quality of service provided at airports while determining tariffs is consistent with the net investment in those airports and the user expectations.

- Ensuring efficiency, adequacy and consistency in provision of air navigation services by encouraging efficient and appropriate investment through a fair rate of return.

  (Ref. Part I, Section 3, Para 3.7)

Scope of Regulation

1.5 Having regard to the mandate given to it by the Act, the Authority has considered its scope of regulation, its regulatory approach and framework for economic regulation of aeronautical services under five categories:

- Airport Operators providing various attendant aeronautical services;
- Air Navigation Service provider facilitating navigation, surveillance and supportive communication thereto for air traffic management;
- Cargo Facility Operators;
- Ground Handling Operators; and
- Fuel Farm Operators / Fuel Access Providers.

1.6 A broad summary of positions that the Authority is considering to take on various issues is provided below.

Treatment of Concession Agreements and Civil Enclaves

1.7 The following is the general framework which the Authority is proposing to adopt in its economic regulation of aeronautical services. While, this will be the overarching framework, it should be noted that as per Section 13 (1) (a) (vi) of the Act, the Authority is to determine the tariff for the aeronautical services taking into consideration "*the concession offered by the Central Government in any agreement or memorandum of understanding or otherwise*". Accordingly, the Authority will consider the provisions and consequently the effect of concession agreements for the concerned airports while / at the time of determining tariffs for the first tariff cycle. In effect, the covenants of the concession agreements may require appropriate modifications to be made to the general framework specified in this Paper.

1.8 Further, the position discussed hereinafter may not apply, ipso facto, to the two Civil Enclaves (at present, Goa and Pune) under the regulatory ambit of the Authority. Appropriate views in respect of the said Civil Enclaves would be taken by the Authority with the representation of the Ministry of Defence in accordance with the provisions of sub-section (1) of Section 4 of the Act, on a case to case basis.

Regulatory Philosophy and Approach in Economic Regulation of Airport Operators

Form of regulation

1.9 The Authority proposes to adopt the Price Cap Regulation. This is also termed as incentive based regulation.

(Ref. Part II, Section 1, Para 1.16)

Regulatory till definition

1.10 The Authority considers that, for the Indian situation, Single Till is the most appropriate basis, in general.

(Ref. Part II, Section 2, Para 2.43)

Fair rate of return

1.11 The Authority proposes to estimate the fair rate of return by using a weighted average cost of capital approach to estimate the nominal post-tax cost of capital.

(Ref. Part II, Section 3, Para 3.21)

1.12 The Authority considers the CAPM to be the most appropriate approach for determining the cost of equity. However, depending on the circumstances of a particular case, the Authority will not be precluded from considering a range of evidence relating to its assessment of the cost of equity. The Authority's approach to estimating the cost of debt will be to look at the actual cost of debt faced by airport operators, subject to reasonableness of such costs based on review of the sources, procedure and method through which the debt was raised. Further, the Authority proposes, for the time being, to use an airport's actual gearing.

(Ref. Part II, Section 3, Para 3.35, 3.48 & 3.65)

Regulatory Asset Base

1.13 The Authority's position for defining the scope of the RAB is that, in normal course, all airport assets will come under the scope of the single till. However, the Authority could exclude certain assets from the scope of RAB based on due considerations of relevant factors. Such assets could, however, be included in the single till if the airport could demonstrate that the asset is integral to the airport. The Authority's default position is that working capital would not be included in the RAB.

(Ref. Part II, Section 4, Para 4.15 and 4.17)

1.14 Work in Progress (WIP) assets would not be considered for inclusion in the RAB, which will ensure that users do not have to pay for assets until they have been commissioned and are in use. However, the Authority will adopt a capitalized financing approach (subject to the position stated in respect of assets financed through pre-funding) by including an allowance for the fair rate of return in the cost of bringing the asset into operation. The Authority's assessment of the fair rate of return for WIP assets will be its assessment of cost of debt.

(Ref. Part II, Section 5, Para 5.34 and 5.35)

1.15 The Authority supports the use of a historic cost approach for determining initial RAB. Given that the initial RAB values investment already made by airport operators, the Authority will include all historical investment made by the Airport operator. While doing so, it will, inter-alia, take into account the following:

(a) Evidence of competitive procurement for major capital investments;

(b) Evidence that investment was in accordance with GoI approved master plan /capital investment plan;

(c) Evidence that investment, if any, over and above as provided for in (b) above was necessary for proper functioning of airport, including the users consideration and / or was made at the specific request of users and stakeholders.

(Ref. Part II, Section 4, Para 4.22)

1.16 Only where insufficient evidence is available and in exceptional circumstances would the Authority seek to exclude investment already made by airport operators from the initial RAB. However, the investment made from pre-funding levy (DF) would not be included in the RAB.

(Ref. Part II, Section 4, Para 4.23, Section 5, Para 5.41)

Capital investment

1.17 The Authority considers that airport development plans should be taken up after appropriate user consultations. Hence, the quality of consultation and the extent to which stakeholder representations have been reasonably taken into account would be key considerations for the regulatory assessment of tariffs. The Authority is, therefore, minded to specify a Consultation Protocol (Appendix 7) that involves an ongoing consultation process and a mechanism

for that process to inform the Authority's decision making. The Authority would expect that all investments proposed to be included in the RAB have been subject to user consultation.

(Ref. Part II, Section 5, Para 5.10 and 5.14)

Depreciation

1.18 The Authority proposes to use the straight line method of depreciation based on depreciation rates from the Companies Act or other evidenced sources, where appropriate. No depreciation on assets funded out of pre-funding receipts would be considered for the purpose of tariff determination.

(Ref. Part II, Section 6, Para 6.10, Section 5, Para 5.41)

Traffic Forecasting

1.19 At each price review, the Authority will request airports to provide it with traffic forecasts together with evidence of consultation with users. The Authority would reserve the right to review forecast assumptions, methodologies and processes and to determine the final forecast to be used for the determination of tariffs. The Authority considers it appropriate to introduce a forecast correction mechanism if the actual traffic turns out to fall outside the prescribed bands.

(Ref. Part II, Section 7, Para 7.23, 7.25 and 7.26)

Operating expenditure

1.20 The Authority's assessment of operating costs will cover:

- Assessment of baseline operating costs based on review of underlying factors impacting variance over the preceding year including treatment for one-time costs or atypical costs;

- Assessment of operating cost projection and efficiency improvement for controllable costs based on review of airport methodology, high level trends in operating costs and productivity indicators, identified cost drivers, and other factors as considered appropriate; and

- Assessment of cost-pass through allowance for uncontrollable mandated costs.

(Ref. Part II, Section 8, Para 8.33)

Quality of Service

1.21 While the Authority will discharge its other functions under the Act with respect to monitoring the set performance standards as may be specified by the Central Government (Section 13 (1) (d) of the Act), it has enunciated its approach to taking into consideration the quality of service provided while determining tariffs.

(Ref. Part II, Section 9, Para 9.16)

1.22 The Authority will require the specific service parameters to be measured at major airports. It believes that a mechanism that specifies reduced tariff for under-performance vis-à-vis specified benchmarks on quality of service would be the most appropriate option to adequately protect the interest of the users. Under such a mechanism, the calculated level of rebate for a year will be passed on to users of airport services in the form of reduced airport (aeronautical) tariff in the following year(s).

(Ref. Part II, Section 9, Para 9.24 and 9.57)

Non-aeronautical Revenue

1.23 The Authority's approach to forecasting non-aeronautical revenues will be to review in detail the bottom-up projections of airports, in conjunction with review of other forecasts for operating costs and traffic and capital investment plans relating to non-aeronautical investments. The Authority would reserve the right to determine the final forecast to be used for the determination of tariffs taking into account any further evidence, which may be available / made available.

(Ref. Part II, Section 10, Para 10.4)

Form of price control and tariff structure

1.24 The Authority proposes that a yield per passenger will initially be determined under the tariff determination process and subsequently detailed tariffs proposals from airports operators (pertaining to the approved yield per passenger) will be reviewed and approved. At the end of each year, the Authority will require the airport to submit a compliance statement setting out how it has complied with the price control formula, identify any under or over-recovery, and make corrections in the subsequent year(s).

(Ref. Part II, Section 11, Para 11.16 and 11.45)

1.25 The Authority is also minded to require that:

- The Passenger Service Fee is proposed to cover only the expenses pertaining to mandated security expenditure ; and

- The User Development Fee is proposed as a revenue head to be allowed in specific cases upon due consideration.

(Ref. Part II, Section 11, Para 11.32 and 11.39)

1.26 As far as the DF in considered, the Authority considers that pre-funding should be a measure of last resort. Before permitting any pre-funding, the Authority will require clear justification, after consultation with users, that pre-funding is in the long term interest of users. The Authority also considers that a new pre-funding levy or an increase in an existing levy should not be introduced during a price control period, in the absence of a full reopening, or interim review, of the price cap itself.

(Ref. Part II, Section 11, Para 11.61 and 11.65)

Regulatory Philosophy and Approach in Economic Regulation of Air Navigation Services

1.27 The Authority recognises that the safety imperative of ANS has important implications for the discharge of its functions in respect of ANS. The Authority, therefore, is minded to adopt a rate of return approach for ANS. The rate of return approach will permit AAI to recover actual net costs and a fair rate of return on its investment.

(Ref. Part III, Section 2, Para 2.4 and 2.7)

1.28 The tariff determination for ANS will be done on the basis of the rate of return regulation, annual compliance process and tariff proposals prepared by AAI, subject to user consultation.

(Ref. Part III, Section 2, Para 2.8, Section 4, Para 4.2 and 4.3)

1.29 The Authority will rely upon the periodic reports and updates on the service performance standards monitored by DGCA and provide any inputs, as it may consider necessary, to the DGCA.

(Ref. Part III, Section 6, Para 6.7)

Regulatory Philosophy and Approach in Economic Regulation of Cargo Facility Operators, Ground Handling Operators and Fuel Farm Operators / Fuel Access Providers

1.30 The Authority recognises that cargo facility operators, ground handling service providers and fuel farm operators / fuel access providers can either be the airport operators themselves or independent agencies / licensees. Where the airport operators are responsible for operating such facilities / providing services, they charge users directly, and where such facilities are operated by independent agencies, such agencies charge users directly while making payments to airport operators (in terms of annual fee, revenue share, concession fee, license fee, common infrastructure charges, charges for utilities, etc.).

1.31 The Authority proposes to consider payments required to be made by independent agencies operating cargo, ground handling, fuel farm / access facilities to the airport operators as part of the passenger yield cap calculation.

(Ref. Part IV, Section 1, Para 1.13)

1.32 The Authority's approach to regulation of tariff / end user charges with respect to cargo facilities, ground handling, and fuel farm facilities / fuel access will comprise two key steps: materiality assessment and competition assessment. Only where the Authority assesses that there is insufficient competition and the impact of regulation would be material on users, would the Authority seek to set tariffs. Elsewhere, the cost of tariff regulation could outweigh the benefits and the Authority would not seek to intrusively regulate tariffs and would only approve annual tariffs.

(Ref. Part IV, Section 1, Para 1.15 and 1.25, Section 2, Para 2.17, Section 3, Para 3.8, Section 4, Para 4.8 and 4.10)

Part VI - Technical Appendices

Appendix 1: White Paper

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White Paper (Pages 1 to 89) from the next page

F.No. AERA/25013/WP-1/2009-10

White Paper No. 01/2009-10

Airports Economic Regulatory Authority of India

Regulatory Objectives and Philosophy in Economic Regulation of Airports and Air Navigation Services

New Delhi: 22nd December, 2009

Rajiv Gandhi Bhawan
Safdarjung Airport
New Delhi – 110 003

TABLE OF CONTENTS

1. PREFACE

The Parliament of India enacted an Act called "The Airports Economic Regulatory Authority of India Act, 2008" (hereinafter to be referred as the 'Act'). The said Act envisages the establishment of a statutory authority called the Airports Economic Regulatory Authority of India (hereinafter referred to as the 'AERA') to regulate tariff for the aeronautical services, determine other airport charges for services rendered at major airports and to monitor the performance standards of such airports.

The provisions of the said Act came in to force w.e.f. 1st January, 2009 and 1st September, 2009. The AERA was established by the Government of India, vide its notification No.GSR 317(E) dated 12th May, 2009.

As per the Act, AERA is to perform the following functions in respect of major airports:

- to determine the tariff for the aeronautical services;
- to determine the amount of the development fees in respect of major airports;
- to determine the amount of the passengers service fee levied under rule 88 of the Aircraft Rules, 1937 made under the Aircraft Act, 1934; and
- to monitor the set performance standards relating to quality, continuity and reliability of service as may be specified by the Central Government or any authority authorised by it in this behalf.

AERA recognises the need for ensuring transparency while exercising its power and discharging its functions. To establish AERA's philosophy and approach to regulation in the context of its statutory functions, AERA has prepared this White Paper listing out certain major issues impacting formulation of a regulatory philosophy.

This paper does not intend to state the position of AERA on any of the aspects dealt herein. In drafting this paper, the emphasis is on readability, taking care to represent the law, theory and practice as closely as possible. This paper has been prepared with the intention of eliciting responses from stakeholders. AERA hopes that this paper will generate discussion and comments, and welcomes written evidence-based (with respect to data, practice domestically / internationally, etc.) feedback, comments and suggestions from stakeholders on issues raised herein. Comments / submissions should be furnished to AERA, **latest by 5th January 2010**, at the following address:

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AERA intends to take feedback, comments and suggestions received on this paper on board while finalising its philosophy and approach and drafting regulations for discharge of its statutory functions.

Yashwant S. Bhave
Chairperson

22nd December, 2009

2. BACKGROUND

A. Legislative and Regulatory Framework

2.1 Entry 29 of the List I (Union List) of the Seventh Schedule to Constitution reads as under:

"Airways, aircraft and air navigation; provision of aerodromes; regulation and organization of air traffic and of aerodromes; provision for aeronautical education and training and regulation of such education and training provided by States and other agencies"

2.2 Thus, the Central Government alone has the legislative and executive powers relating to airports and primary responsibility for development of airports rests with the Central Government.

2.3 The civil aviation sector in India was until, recently, governed by two Acts of Parliament:

(a) The Aircraft Act, 1934 providing for the control of the manufacture, possession, use, operation, sale, import and export of aircraft; and

(b) The Airports Authority of India (AAI) Act, 1994 providing for the constitution of AAI and the vesting of the airports in AAI.

2.4 The Aircraft Act, 1934 (the "Aircraft Act") and the Rules made there under by the Central Government inter-alia, govern the development, maintenance and operation of all airports, including Greenfield airports. Under the Act, Central Government has the sole right to grant a license for setting an airport, and the operations of the airport would be subject to its licensing conditions (Rule 78 of the Aircraft Rules). The Airports Authority of India Act, 1994 makes some specific provisions in respect of the airport operated by the AAI and the air navigation services.

2.5 Regulations applicable to the sector included the Aircraft Rules, the Civil Aviation Requirements, and Aeronautical Information Circulars.

2.6 Various functions pertaining to oversight of the aviation sector in India have been, hitherto, distributed between the Ministry of Civil Aviation (MoCA), Director General of Civil Aviation (DGCA), Bureau of Civil Aviation Security (BCAS), and Airports Authority of India (AAI).

2.7 The civil aviation sector in India is also currently governed, broadly, by three policies: – the Domestic Air Transport Policy, Policy on Airport Infrastructure, Greenfield Airports Policy. The Domestic Air Transport Policy removed barriers to entry of private airlines in domestic air transport, the Policy on Airport Infrastructure relates to use and development of airport

infrastructure, and the Greenfield Airports Policy lays down the requirements and procedural aspects pertaining to setting up of Greenfield airports in the country.

In addition to framing policies, the Ministry provides guidance to the organizations in the implementation of policy guidelines; monitors and evaluates as also provides their interface with Parliament. Ministry of Civil Aviation has the following organizations under its administrative control.

The Directorate General of Civil Aviation is the principal regulatory body in the field of civil aviation. It is responsible for regulation of air transport services to/from and within India, formulation and enforcement of civil air regulations, air safety and airworthiness standards along with Coordination of regulatory functions with International Civil Aviation Organisation (ICAO).

The Bureau of Civil Aviation Security (BCAS) is an attached office of the Ministry of Civil Aviation. The Bureau is responsible for laying down the standards for security and anti-sabotage measures in respect of civil aviation and ensuring their compliance through regular Inspections and Security Audits. It is the singular regulatory authority responsible for development, maintenance, updation and implementation of National Aviation Security programme for India and fulfill all international obligations in this context.

Airports Authority of India is a statutory body, under the Act of the Parliament (Airports Authority of India Act, 1994), formed with a view of to accelerate the integrated development, expansion and modernization of air traffic services, passenger terminals, operational areas and cargo facilities at the airports in the country.

Source: Ministry of Civil Aviation, Annual Report 2008-09

B. AERA's Mandate

2.8 The Airports Economic Regulatory Authority of India Act, 2008 was enacted on 5.12.2008. Under the Act, AERA's mandate covers determination of tariffs for aeronautical services, user charges and monitoring of set performance standards in respect of major airports. Major airports have been defined under the Act as follows:

"major airport means an airport which has, or is designated to have, annual passenger throughput in excess of one and a half million or any other airport as the Central Government may, by notification, specify as such"

2.9 Presently twelve (12) airports in the country have annual passenger throughput in excess of one and a half million as can be seen from the following table.

Exhibit 1: Annual Passenger Throughput

Sl. No.	Name of Airport	Passenger Throughput 2008-09 (in million)
1	Mumbai	23.43
2	Delhi	22.84
3	Chennai	9.84
4	Bangalore	8.76
5	Kolkata	6.99
6	Hyderabad	6.22
7	Cochin	3.36
8	Ahmedabad	2.83
9	Goa	2.22
10	Trivandrum	1.95
11	Pune	1.77
12	Calicut	1.68

Source: Traffic Reporter (Volume 1; Issue 65), Airports Authority of India

2.10 These 12 airports have divergent contexts with differences in ownership and management structure:

(a) 2 airports – Mumbai and Delhi being leased airports of AAI under PPP management, with majority private participation;

(b) 3 airports – Bangalore, Hyderabad and Cochin being private airports;

(c) 5 airports – Chennai, Kolkata, Ahmedabad, Trivandrum and Calicut being airports under the Airports Authority of India; and

(d) 2 airports – Goa and Pune being Civil Enclaves at defence airfields, managed and operated by the Airports Authority of India.

Certainty on AERA's purview

Variation in Annual Passenger Throughput

2.11 It is possible that certain existing or Greenfield airports may witness annual passenger throughput in excess of one and a half million going forward. It is also possible that at one or more of the major airports at any time, annual passenger throughput may decline below one and a half million in any particular year or over more than one year.

2.12 It would be important to provide stability of regulatory regime for these airports as well as their users in terms of the entity responsible for their economic regulation and period of regulatory purview. Possible variation in annual passenger throughput vis-à-vis the threshold figure of one and a half million mentioned above presents an issue in this context.

Designation / Notification as Major Airport

2.13 Also, as per the Act, an airport, which is "*designated*" to have annual passenger throughput in excess of one and a half million could come under AERA's purview for tariff determination and monitoring of set performance standards. In other words, an airport where actual passenger throughput is not in excess of 1.5 million but which has a designated capacity of 1.5 million or above would qualify to be a major airport.

2.14 The Act also provides for the Government of India to notify other airports as Major Airports from time to time.

2.15 The procedural aspects involved in identifying airport(s) which are designated to have annual passenger throughput in excess of one and a half million would need to be specified in future.

C. Status of Aviation Sector in India

2.16 The Indian economy has been growing consistently over the last few years, except 2008-09. Stable growth, rising foreign exchange reserves, increasing inflows of Foreign Direct Investment (FDI) set the stage for high growth expectations.

2.17 Propelled by growth of the economy and liberalization, the aviation sector in India experienced an unprecedented growth in the corresponding period. The estimated total passenger throughput for all airports in India in 2008-09 grew to 109 million from 40 million in 2000-01 and freight tonnage from 0.80 million to 1.70 million tons in the same period. Also, as noted by the Naresh Chandra Committee on a roadmap for Civil Aviation Sector in India (2003), foreign exchange transactions of $22.5 billion are directly facilitated by civil aviation and another $96 billion indirectly through civil aviation services.

2.18 The aviation sector in India is a collection of multiple distinct, yet intertwined, commercial functions in different segments – for instance, airport, airlines, ground handling, air traffic control, safety, security, etc.

Airport Infrastructure

2.19 In the past, airport development did not keep pace with the growth of the Indian economy, especially the quantum jump in passenger and cargo air traffic since 2002[1].

2.20 Airport management, development and operation of airports in India have been the responsibility of Airports Authority of India including the airports in Tier II and Tier III cities and north-eastern region with limited air connectivity.

2.21 Presently, AAI manages 126[2] airports including civil enclaves (11 international airports, 26 civil enclaves and 89 domestic airports). A number of these airports however are not actively used and are financially unprofitable.

2.22 In this context, the Report of the Committee on a Road Map for the Civil Aviation Sector[3] had noted:

"*These airports are typically loss-making and serve social obligations of providing nation-wide connectivity, rather than presenting profitable investment opportunities. Countries have developed different mechanisms to deal with what is commonly known as "essential air services" in order to provide connectivity services to remote areas that might not be commercially viable, and are unlikely to attract private investment.*

In India too, a large number of airports do not generate enough revenue to meet their operational costs and, as a consequence, the AAI is not is a position to upgrade existing small airports or develop new ones. Hence, financial support for the development and maintenance of essential but commercially unviable airports will be necessary for some time to ensure adequate air connectivity throughout the country. In this context, the Ministry of Civil Aviation should develop objective and transparent criteria for selecting airports that need to be provided with financial support."

2.23 The Report of the Committee on a Road Map for the Civil Aviation Sector also laid emphasis on development of the country's aviation infrastructure by enabling private participation. The privatization initiative started with the award of build-operate-transfer (BOT) concessions to private players for Greenfield airports at Bangalore and Hyderabad in 2004 and with restructuring of existing airports at Delhi and Mumbai through the joint venture route in 2006.

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[1] Report of the task force, Financing Plan for Airports, Planning Commission, July 2006

[2] As per AAI's website (last updated on 22nd September 2009)

[3] Report of the Committee on a Road Map for the Civil Aviation Sector, Ministry of Civil Aviation, 30th November 2003

2.24 In the past, government policy relating to Greenfield airports was restrictive and aimed at protecting the financial viability of the existing airports. However, the spurt in traffic liberalized the approach towards setting up of Greenfield airports. The anticipated investment in airport development during the Eleventh Plan is over Rs. 40,000 crores, both from public and private sources, including for Greenfield airports[4].

2.25 The Government of India has also approved the construction of an Integrated Passenger Terminal Building at Kolkata airport and the plan for modernization and expansion of Chennai Airport. To ensure balanced airport development around the country, a comprehensive plan for development of 35 other AAI non-metro airports was also prepared.

Services for Navigation, Surveillance and Supportive Communication

2.26 The Airports Authority of India provides Communication, Navigation, Surveillance and Air Traffic Management (CNS-ATM) services at all the civil airports in the country which covers Indian airports measuring over 2.8 million square nautical miles (land area 1.05 million square nautical miles and oceanic area 1.75 million square nautical miles). CNS-ATM services are provided by AAI at 9 other airports also which are not managed by AAI i.e. Delhi, Mumbai, Bangalore, Hyderabad, Cochin, Lengpui, Diu, Puttaparthy and Vidyanagar airports.

2.27 In this context, the Convention on International Civil Aviation (Doc 7300/9) provides for complete and exclusive sovereignty of each contracting State over the airspace above its territory and for each State to undertake provision of these services in accordance with the standards and practices recommended or established from time to time, pursuant to the Convention.

2.28 Section 12 (2) of the Airports Authority of India Act, 1994 stipulates that:

"*It shall be the duty of the Authority to provide air traffic service and air transport service at any airport and civil enclave.*"

2.29 Further section 12 A (1) of the Airports Authority of India Act, 1994 while providing for AAI, in public interest or in the interest of better management of airports, to make a lease of the premises of an airport, provides:

"*Provided lease shall not affect the functions of the Authority under section 12 which related to air traffic service or watch and ward at airports and civil enclaves.*"

[4] Greenfield airports policy, Government of India

2.30 It is in the above context that regulation for aeronautical services pertaining to navigation, surveillance and supportive communication would need to be undertaken.

Other Sector Stakeholders

2.31 There are fifteen domestic carriers in India with four national carriers and eleven private scheduled operators including two cargo operators. The presence of private carriers has increased from just two in 2002-03 to nine in 2008-09, with a total of 39.46 million passengers[5] being carried by all the scheduled domestic Indian Carriers in 2008-09.

2.32 The operating environment in the domestic airline industry has become extremely competitive over the last few years with increase in the number of players leading to a fragmented market share, growing competition and pricing pressure on players. The domestic aviation sector saw the entry of Low Cost Airlines with the launch of Air Deccan in 2003-04. Subsequently, other low cost airlines like SpiceJet, Go Air and Indigo were launched. Such low cost no frills airlines have captured a market share of more than 40% by 2008-09[6].

2.33 Over the recent past, airlines rapidly expanded their fleets and operations in a bid to capture and maintain market share. However, a number of factors including the recent economic slowdown have led to airlines reporting huge losses.

2.34 The air cargo market in the country has also witnessed increased activity over the last few years especially with the entry of number of new players in cargo handling market (terminal management, development and operation). International operators like Menezies (JV with Bobba group at Bangalore and GHIAL at Hyderabad) and SATS Singapore (JV with Air India at Bangalore) have made significant investments for offering newer and better services for cargo users. International express cargo operators like FedEx and DHL are also increasingly establishing their presence in the Indian market.

2.35 The Government announced a new ground handling policy for Indian airports in September 2007. This policy permits the following agencies to carry out ground handling functions at six metropolitan airports:

- The airport operator itself or its Joint Venture (JV) partner;
- Subsidiary companies of the national carrier i.e. National Aviation Company of India Ltd. or its joint ventures, specialized in ground handling services; and

[5] DGCA Air Transport Statistics for the year 2008-09, Part III

[6] DGCA Market Share Data, Nov 09

- Any other ground handling service providers selected through competitive bidding on revenue sharing basis by the airport operator subject to security clearance from Bureau of Civil Aviation Security and observance of performance standards as may be laid down by the airport operator.

2.36 At other airports, i.e. other than six metropolitan airports, the airlines, except foreign airlines, have been permitted to undertake self-handling.

2.37 Though the exit of entities, not entitled to undertake ground handling services as per the above policy, has been presently kept in abeyance, a number of new players are trying to enter the ground handling market at Indian airports.

3. REGULATORY OBJECTIVES

3.1 This section outlines certain key issues in (1) setting out objectives for economic regulation as well as in (2) specifying key principles for the process of regulation.

A. Objectives

3.2 While defining objectives for economic regulation of major airports and air navigation services, as required under the Act, policies enunciated by ICAO, international examples and the context of Indian airports could be considered.

Provisions of the AERA Act, 2008

3.3 The AERA Act, 2008 was enacted to achieve the following objectives:

"*The basic objectives of AERA are to create a level playing field and foster healthy competition amongst all major airports (government owned, PPP – based, Private), encourage investment in airport facilities, regulation of tariffs of aeronautical services, protection of reasonable interests of users, operation of efficient, economic and viable airports.*" [7]

3.4 The Act provides for AERA to take into consideration the following factors while determining tariffs for aeronautical services in respect of major airports:

(a) The capital expenditure incurred and **timely investment** in **improvement of airport facilities**;

(b) The **service provided**, its **quality and other relevant factors**;

(c) The cost for **improving efficiency**;

(d) **Economic and viable operation** of major airports;

(e) **Revenue received from services other than aeronautical services**;

(f) The **concession offered** by the Central Government in any agreement or memorandum of understanding or otherwise;

(g) Any other factor that may be relevant for the purposes of the Act.

ICAO Policies and International Examples

3.5 ICAO's Airport Economics Manual (Doc 9562) notes that economic (regulatory) oversight can work best when clear objectives are set out. Such objectives can then serve as a framework for regulatory policy decisions.

[7] Statement of Objects and Reasons accompanying the Bill

3.6 The statements of objectives of certain international aviation regulators based on documents in the public domain are presented at Appendix – 1.

3.7 While ICAO itself sets out the possible objectives for an independent economic regulatory mechanism (see box below[8]), it needs to be noted that economic regulation as recognised by ICAO comprises all measures taken by a State with regard to legislation or rule-making, establishment of a regulatory mechanism, etc.

Objectives of Economic Oversight

ICAO's Policies on Charges for Airports and Air Navigation Services (Doc 9082) suggests that objectives economic regulation could draw upon or adapt from, but need not be limited to, the following:

- Minimize the risk of airports and ANSPs engaging in anti-competitive practices or abusing their dominant position;
- Ensure non-discrimination and transparency in the application of charges;
- Ascertain that investments in capacity meet current and future demand; and
- Protect the interests of passengers and other end users.

To promote these objectives, consistent with the form of economic oversight adopted, States should ensure that airports and ANSPs consult with users and that appropriate performance management systems are in place.

3.8 It is important to deliberate on how these aspects could be synergistically considered while laying down broader objectives for economic regulation of major airports and air navigation services.

[8] Airport Economics Manual (Doc 9562), Second Edition – 2006; ICAO'S Policies on Charges for Airports and Air Navigation Services (Doc 9082), Eighth Edition — 2009

Objectives of Economic Oversight (...contd.)

In addition, the following broader objectives are mentioned in ICAO's Airport Economics Manual (Doc 9562) for possible inclusion:

- Promote the sound development of civil aviation;
- Promote regional economic development;
- Ensure non-discriminatory access to all airport users, including new entrants, both airside and landside;
- Consider the necessary balance of the respective interests between airports and users;
- Provide a procedure for the handling of complaints and dispute resolution;
- Ensure that traffic data and traffic forecasts are presented to the users, in order to convince the users that the charges are fair and reasonable;
- Ensure that all the State's obligations specified in the Chicago Convention and its Annexes as well as all other agreements, including air services agreements, to which the State is a party, are observed;
- Ensure the observance of ICAO cost recovery principles contained in Doc 9082.

ICAO's Manual on Air Navigation Services Economics (Doc 9161; para 2.24) provides the broader objectives for economic oversight of air navigation services for possible inclusion:

- the need to protect users against overcharging or other potentially anti-competitive practices where they constitute abuse of a dominant position;
- the need for transparency with respect to an air navigation services provider's financial and other data required to enable users to properly assess the basis for charging proposals;
- the need to protect users against undue discrimination in the application of charges;
- the need to address efficiency in the provision of air navigation services;
- the need to address the adequacy and consistency of service standards and quality;
- the need to encourage appropriate and efficient investment;
- the need for effective consultation with users so as to ensure that their views are taken properly into account; and
- the need for a dispute resolution mechanism.

3.9 With reference to the above, as a possible formulation, broader objectives for economic regulation of major airports and air navigation services could include:

(a) Facilitating wider policy aims for the aviation sector through the regulation of major Indian airports, recognising their role in the sector and economy;

(b) Protecting and promoting the interests of existing and future users of major Indian airports and air navigation services through provision of quality services at competitive rates;

(c) Promoting investment in airports and air navigation services and effective management of airports and air navigation services so that all reasonable demands for airport services are met efficiently.

3.10 These regulatory objectives could serve as a framework to guide regulatory policy in future in three key dimensions:

(a) Viable operations of airports in terms of maintaining investor confidence of a fair rate of return;

(b) Furthering interests of users in terms of incentivising efficient airport investment and operations and ensuring their fair remuneration.

(c) Ensuring efficiency, adequacy and consistency in provision of air navigation services by encouraging efficient and appropriate investment.

B. Principles of Regulatory Process

3.11 With reference to statutory functions prescribed under the AERA Act and possible broader objectives for economic regulation of major airports and air navigation services, certain principles could be considered with respect to the regulatory process to be followed.

Transparent and Consultative

3.12 The AERA Act provides a guiding principle on the regulatory process to be followed by AERA while discharging its statutory functions in terms of provision of Section 13 (4) which states that:

"*The Authority shall ensure transparency while exercising its power and discharging its functions, inter alia, -*

(a) by holding due consultations with all stake-holders with the airport;

(b) by allowing all stake-holders to make their submissions to the authority; and

(c) *by making all decision of the authority fully documented and explained.*"

3.13 Decisions affecting stakeholders could be made through a process of open, transparent and effective consultation through various means – viz. discussions, receiving feedback through print/ post/ electronic modes, formal prearranged meetings where felt appropriate, and if required, through conduct of hearings.

3.14 Under such a process, stakeholders could comment on the notified subject(s) and comments could be taken up for consideration by AERA while framing its orders / regulations, etc. The process could enable stakeholders to constructively participate in the decision process.

3.15 In view of the internationally accepted practice of consultations between airports, ANS provider and other stakeholders and emerging best regulatory practice in relation to the oversight of the framework for such consultation, there is also possibility of engraining such stakeholder consultations (for example between airports, ANS provider and users with respect to planned airport development) in the regulatory process to be prescribed.

Consistent and Predictable

3.16 Airports are complex, capital intensive businesses and demand for airport services is growing and may continue to grow in the foreseeable future. Airport investment cycles involve periodic large, lumpy investment in long-lived assets to support that growth, thereby ensuring that quality services can be provided when required. The long lives of the assets mean that investors look to a stream of income, sometimes over a number of decades, to warrant their decision to provide the finance.

3.17 No business investment is risk-free, so investors have to make decisions based on what they can reasonably expect, balancing the commercial upsides and downsides to assess that the investment opportunity is sufficiently attractive in relation to other investment opportunities available to them.

3.18 For investors thinking about committing funds to a regulated airport, the regulatory regime could be important to these assessments. Safeguards built into the Act, and principles to be specified with respect to the regulatory process could address investors' perception of "regulatory risk" that could otherwise impact the development of airport infrastructure required by users.

3.19 The scope for competition in provision of air navigation services is limited and direct competition between different air navigation service providers within the same airspace is not a practical possibility. Therefore, to protect the user from abuse of dominant position, greater transparency could be insisted upon.

3.20 Based on evidenced-based feedback, inputs and suggestions from stakeholders to this White Paper, a set of regulatory objectives and principles for the regulatory process could be considered.

3.21 Also, while Section 13 (1) (a) of the AERA Act provides for different tariff structures to be determined for different airports having regard to all or any of the considerations specified therein, the objectives and principles are intended to enunciate the bases for such possible differences in implementation to ensure consistency of principles across different airport contexts.

4. REGULATORY APPROACH

4.1 In the context of statutory functions of AERA under the Act and regulatory objectives & principles for regulatory process that may be prescribed, regulatory approach on a number of important aspects would need to be considered. The regulatory approach could have reference to international examples and the context of Indian airports and air navigation services.

A. Form of Regulation

4.2 Section 13 (2) of the AERA Act provides for AERA to determine the tariff for aeronautical services once in five years and amend them in the interim, in public interest, if so considered appropriate.

4.3 Across sectors and regulatory jurisdictions, certain forms of regulation are generally adopted. These have been profiled below.

Price Cap Regulation

4.4 Price cap regulation is now a common way of setting prices in a wide range of monopoly or near-monopoly situations. Typically, the formulae for determining prices under such a cap incorporate terms that automatically reflect inflation (e.g. CPI) and it is commonly known as 'CPI-X regulation'. The 'X' factor principally takes into account the expected changes in business parameters pertaining to investments, depreciation, & cost implication of increased level of service on one hand and anticipated efficiency improvements (through reduced operating costs), and growth in volumes on the other.

4.5 The formulae under such a form of regulation reflect the maximum possible percentage increase in prices over certain base parameter(s). The base parameter(s) itself can be (i) an aggregate term like yield per passenger or (ii) individual tariffs. This aspect of price structuring is discussed further later in this document. This works with reference to a given level of base parameters at the initial year (T=0) of the regulatory cycle, parameters which are allowed to increase by the formula. The increase (over the base parameters) is structured to give a reasonable rate of return (on investments or equity) to the investors in airport infrastructure.

4.6 While the initial concept works best for firms with easy to measure unit costs, the form of regulation has evolved to account for investing and service performance as well as operating expenditure. In the same way as for operating expenditure, it provides incentives for an airport to develop commercial revenues.

4.7 Price Cap Regulation was originally proposed for economic regulation of monopoly utilities as a way of encouraging incremental improvements in

performance[9] and, initially in the telecoms sector, to provide a route to eventual deregulation. Regulators in a number of countries have evolved the methods of Price Cap Regulation to address a wide range of circumstances. In the United Kingdom, CPI-X (or its UK equivalent, RPI-X) has been used in the regulation of designated airports since the privatisation of BAA in 1987.

Rate of Return Regulation

4.8 Rate of Return Regulation is the name for a form of regulation that permits the regulated firm to set prices at such a level that it recovers its costs, including a rate of return on an appropriately defined value of capital employed.

4.9 The predominant consideration under such a form of regulation would be determination of nature of return and the appropriate base / value of capital employed.

4.10 Rate of return regulation is extensively used in the US across regulated sectors and is also used at certain airports in Europe. Traditionally, this form of regulation has been primarily used for publicly owned entities.

Light Touch Regulation

4.11 A number of academic commentators have argued that the intrusive process of regulation itself creates distortions that can be worse than the effects of monopoly abuse[10] and that light touch regulatory approaches can deliver better performing sectors than formal price control[11].

4.12 Commentators and the regulatory authorities point out that an important component of light touch approaches is meaningful price monitoring and a realistic long term commitment to intruding regulation in the event of unacceptable outcomes. These may include the firm setting prices at unacceptable levels, earning profits deemed excessive, reducing quality beyond some point or some other behavior or outcome considered a clear abuse of monopoly.

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[9] Michael Beesley & Stephen Littlechild, 'Privatization: principles, problems and priorities', Lloyds Bank Review, 1983

[10] David Starkie, 2001, 'Reforming UK Airport Regulation', Journal of Transport Economics and Policy, 2001; Peter Forsyth, 2001, 'Airport Price Regulation: Rationales, Issues and Directions for Reform', Submission to the Productivity Commission Inquiry

[11] Peter Forsyth, 2006, 'Airport Policy in Australia and New Zealand: Privatisation, Light Handed Regulation and Performance', (paper presented at the Workshop on Comparative Political Economy and Infrastructure Performance: The Case of Airports, Madrid September 2006)

4.13 Light touch regulatory approaches in the airports sector have been adopted in New Zealand and Australia, and arguably wherever airports are free to set their own charges, subject for example to competition law constraints. Australia had a system of incentive regulation for its airports which encountered problems, and was replaced by a loosely specified monitoring system. New Zealand has operated with no explicit regulation, but the threat of regulation should performance be unsatisfactory.

4.14 The price cap regime for airport regulation in Australia moved to price monitoring in 2002. In 2006, the Productivity Commission reviewed airport performance under the new regime. Generally, airports supported the current arrangements, while airlines argued that it did not sufficiently restrain the use of market power. The ACCC was also critical of current arrangements, agreeing with the airlines that restraints on the use of market power were unspecific and too weak (ACCC, 2006).

4.15 New Zealand took a different approach to light handed regulation, sometimes referred to as Shadow Regulation. Instead of an explicit review/sanction mechanism, the New Zealand approach involved a general provision in the relevant legislation to enable a review of pricing in industries such as airports to be initiated by the Minister at any time. Though they are not formally regulated, they are subject to the threat of price controls.

4.16 Academic commentators have pointed out that the assessment of light handed regulation depends on what it is expected to achieve. From a broad efficiency perspective, it has performed well, though it has not been without problems, especially those associated with investment. If the objective is to keep prices close to cost, and minimise the use of market power, the system may be seen as less successful[12].

4.17 It is also not clear whether and to what extent light touch approaches depend on the commercial, governance and regulatory traditions of a country.

4.18 The table below provides a broad comparison of these forms of regulation.

[12] Peter Forsyth, 2006, 'Airport Policy in Australia and New Zealand: Privatisation, Light Handed Regulation and Performance', (paper presented at the Workshop on Comparative Political Economy and Infrastructure Performance: The Case of Airports, Madrid September 2006)

Exhibit 2: Comparison of Forms of Regulation

Rate of Return	Price Cap	Light Handed Regulation
Provides incentives for investing in capacity expansion since the focus is on setting tariffs / charges that provide for a certain rate of return.	Provides incentives to increase efficiency. Setting the price cap in advance for a number of years based on forecast costs and permitting the regulated firm to keep the surplus during the course of regulatory cycle, gives the firm an incentive to reduce its unit costs compared with the original forecast. In due course regulator resets prices to take improvements into account thereby benefiting users as well.	Light touch regulation creates the least amount of market distortions[13].
Cost-cutting by the entity cannot bring extra gains, and there is no distorted incentive to compromise on service quality.	Airports under the price-cap regulation have incentive to postpone investments and reduce costs (at the expense of service quality in absence of other safeguards). May need safeguards in form of service quality monitoring regime.	Allows accounting for the impact of external (unexpected) factors in price setting, which reduces the volatility of profit and the risk of firm failure. Incentives to reduce costs could be most significant in a competitive context.
Does not encourage improving efficiency[14]; since airport's costs are already covered, cost-cutting would not bring any extra gains. Capital input productivity and Total factor productivity is low[15].	Capital input productivity as well as total factor productivity is high[2].	Relies on market mechanism for productivity gains by providing for commercial negotiations between airports and stakeholders. Safeguards against monopoly abuse built in through a threat of regulation[16].

[13] David Starkie, 2001, 'Reforming UK Airport Regulation', Journal of Transport Economics and Policy, 2001; Peter Forsyth, 2001, 'Airport Price Regulation: Rationales, Issues and Directions for Reform', Submission to the Productivity Commission Inquiry

[14] Tae Hoon Oum, Anming Zhang, and Yimin Zhang, 2004, 'Alternative Forms of Economic Regulation and their Efficiency Implications for Airports', Journal of Transport Economics and Policy

[15] Tae Hoon Oum, Anming Zhang, and Yimin Zhang, 2004, 'Alternative Forms of Economic Regulation and their Efficiency Implications for Airports', Journal of Transport Economics and Policy

[16] Peter Forsyth, 2006, 'Airport Policy in Australia and New Zealand: Privatisation, Light Handed Regulation and Performance', (paper presented at the Workshop on Comparative Political Economy and Infrastructure Performance: The Case of Airports, Madrid September 2006)

Rate of Return	Price Cap	Light Handed Regulation
Could involve cost and management time for on-going (annual) regulatory compliance on permitted vis-à-vis actual returns.	Involves costs and management time for periodic tariff setting. Also requires regulators to consider a sizeable volume of evidence at each price review to determine price levels that satisfy economic objectives of regulation. Between periodic reviews however, compliance with the price control can be demonstrated relatively simply without requiring further detailed analysis of the airport's cost base and forecasts.	Avoids the costs and management time, at airports and the regulator, associated with carrying out detailed price reviews and monitoring compliance

Indian Context

4.19 Paragraph 20 of ICAO's Policies on Charges for Airports and Air Navigation Services recommends that:

"*States should select the appropriate form of economic oversight according to their specific circumstances, while keeping regulatory interventions at a minimum and as required. When deciding on an appropriate form of economic oversight, the degree of competition, the costs and benefits related to alternative forms of oversight, as well as the legal, institutional and governance frameworks should be taken into consideration.*"

4.20 In the Indian context, the State Support Agreements with DIAL and MIAL (schedules and relevant clauses being substantially the same in each agreement), provide for a methodology for calculating the aeronautical charges in the "shared till inflation-X price cap model". The issue of "tills" - including shared or hybrid till, is discussed in detail later in this document.

4.21 The concession agreements for the development, construction, operation and maintenance of airports at Bengaluru and Hyderabad provide for regulated airport charges to be determined consistent with ICAO Policies.

Period of Regulation

4.22 Potentially the period of tariff determination / regulation could be between one to five years. While frequent tariff reviews can add to costs related to the tariff determination process, a number of State Electricity Regulatory Commissions (SERCs) in India have adopted a period of 3 years for tariff determination on account of aspects like lack of information on the operations

of the regulated entities, ability to adjust tariffs at shorter intervals during a transitionary phase for the business / sector, etc.

4.23 A tariff determination for a longer period of up to 5 years can provide incentive for the regulated entity to make efficiency improvements under price cap regulation while providing for stability in pricing regime.

4.24 The State Support Agreements for DIAL and MIAL provide for periodic determination of tariffs with an illustrative example of a price cap model therein relating to a five-year regulatory period.

4.25 The concession agreements for BIAL and HIAL provided that from the date the Independent Regulatory Authority (AERA) had the power to approve regulated charges, these entities would be required to submit details and obtain approval of tariffs / charges for the "next succeeding relevant period".

4.26 Revision / re-determination of tariffs / charges for AAI in the past were not undertaken at any particular periodicity.

4.27 As stated in paragraph 4.2, the Act provides for AERA to determine the tariff for aeronautical services once in five years. A provision for interim amendment has been provided for in public interest, if so considered appropriate.

B. Scope of Regulation

4.28 AERA's functions in respect of major airports include tariff determination for aeronautical services. Section 2 (a) of AERA Act defines aeronautical services as any service provided:

(a) for navigation, surveillance and supportive communication thereto for air traffic management;

(b) for the landing, housing or parking of an aircraft or any other ground facility offered in connection with aircraft operations at an airport;

(c) for ground safety services at an airport;

(d) for ground handling services relating to aircraft, passengers and cargo at an airport;

(e) for the cargo facility at an airport;

(f) for supplying fuel to the aircraft at an airport; and

(g) for a stake-holder at an airport, for which the charges, in the opinion of the Central Government for the reasons to be recorded in writing, may be determined by the Authority.

4.29 Tariffs would need to be determined for the above mentioned aeronautical services in terms of the actual service provider (who may / may not be the airport operator). The table below presents the present context of provision of the above services at major Indian airports.

Exhibit 3: Provision of Aeronautical Services (under AERA Act) at major airports

Sl. No.	Aeronautical Service	Service Providers at major Indian airports
1	Navigation, surveillance and supportive communication thereto for air traffic management	Airports Authority of India
2	• Landing, housing or parking of an aircraft • Other ground facility offered in connection with aircraft operations at an airport • Ground safety services at an airport	Airport Operators
3	Ground handling services relating to aircraft, passengers and cargo at an airport	A number of entities including independent concessionaires
4	Cargo facility at an airport	Airport operators / airlines / concessionaires
5	Supplying fuel to the aircraft at an airport	Airport / fuel farm operator

Navigation, Surveillance and Supportive Communication

4.30 Services under this broad head could correspond to services under five broad categories[17]:

(a) Air Traffic Management services (ATM);

(b) Communications Navigation and Surveillance service (CNS)

(c) Meteorological Services for Air Navigation (MET);

(d) Search and Rescue services (SAR) and

(e) Aeronautical Information Services (AIS).

4.31 Possible coverage of services under the above categories is presented in ICAO's Manual on Air Navigation Services Economics (Doc 9161). In this context, reference could also be made to any requirements under Civil Aviation Requirements of the Director General of Civil Aviation (DGCA).

4.32 Tariff determination for aeronautical service pertaining to navigation, surveillance and supportive communication thereto for air traffic management at major airports would need to be undertaken for the Airports Authority of India as the sole provider of this service at these airports.

[17] ICAO's Manual on Air Navigation Services Economics, Doc 9161

Landing, Housing, Parking and other Ground Facilities

4.33 Aeronautical services pertaining to (i) landing, housing and parking of aircraft, (ii) other ground facilities offered in connection with aircraft operations at an airport and (iii) ground safety services at an airport cover a broad gamut of core activities that are critical to the functioning of an airport. Such services, provided by airport operators themselves, could typically include[18]:

(a) provision of flight operation assistance and crew support systems;

(b) the movement and parking of aircraft and control facilities;

(c) the maintenance facilities and the control of them and hangarage of aircraft;

(d) rescue and fire fighting services;

(e) operation and maintenance of passenger boarding and disembarking systems, including vehicles to perform remote boarding;

(f) any other services deemed to be necessary for the safe and efficient operation of the Airport;

(g) Airfield lighting;

(h) Air Taxi Services;

(i) Apron and aircraft parking area;

(j) Apron control and allocation of aircraft stands;

(k) Bird scaring;

(l) Emergency services;

(m) Guidance systems and marshalling;

4.34 In view of the fact that these services are provided by airport operators themselves, their tariff determination could be combined for the airport operator. This could enable consideration of the common role of the airport operator in provision of various services and enable institutionalising and operation of an effective incentive regime.

[18] Based on Operation, Management and Development Agreement (OMDA) between Airports Authority of India and Delhi International Airport Private Limited

Ground Handling

4.35 Under AIC Sl. No. 7/2007 dated 28th September 2007 issued by DGCA, ground handling has been considered to comprise:

(a) ramp handling including activities specified at an annexure thereto;

(b) traffic handling including activities specified at an annexure thereto; and

(c) any other activity specified by the Central Government to be a part of either ramp handling or traffic handling.

4.36 Ground handling services at certain major airports are, presently, provided by more than one entity. Further, presently airlines are also undertaking self handling to cater to their respective requirements. Ground handling service providers levy charges on airlines and when different from airport operators often pay a concession fee / revenue share to the airport operator.

4.37 In this context, it is important to note that Rule 92 of the Aircraft Rules, 1937 provides that:

"*The licensee shall, while providing ground handling service by itself, shall ensure a competitive environment by allowing the airline operator at the airport to engage, without any restriction, any of the ground handling service provider, who are permitted by the Central Government to provide such services. Provided that such ground-handling service provider shall be subject to the security clearance of the Central Government.*"

4.38 Further, DGCA's circular (referred above) on grant of permission for providing ground handling services at airports other than those belonging to the Airports Authority of India provides for:

(a) A minimum of two ground handing service providers at metro airports in addition to the subsidiaries of National Aviation Company of India Ltd. or their joint ventures; and

(b) airline operators, except foreign airline operators, to undertake self-handling in addition to the above at all other airports.

4.39 Similar provisions in respect of scope and entities permitted to undertake ground handling services at airports of the Airports Authority of India are specified under AAI's General Management, Entry for Ground Handling Services Regulations, 2007.

4.40 It is relevant to note that the "ground handling services" are listed as non-aeronautical services in schedule 6 of OMDA in respect of Delhi and Mumbai airports.

Cargo Facility

4.41 Cargo facilities at the airport provide services for handling of various categories of cargo (freight and mail) including general cargo, special cargo/shipment, general mail and diplomatic mail/cargo.

4.42 Typically, cargo facilities providing services for freight and mail handling include:

- Facilities for physical handling of export, transfer and import freight, related document handling, facilities for provision of customs procedures and implementation of any security procedure agreed between the parties or required by the circumstances;
- Facilities for warehouse services for physical handling of storage, retrieval and delivery of freight and mail with the essential equipment;
- Facilities for security services in respect of cargo and Mail include screening of freight and/or mail, physical examination of freight, holding of cargo and/or mail for variable periods and secure storage of cargo and/or mail.

4.43 The cargo handling at such facilities at major airports is either undertaken directly by airport operators or by licensees. There are a number of airports (Delhi, Mumbai, Bangalore, Chennai, etc.) where there exist more than one cargo facility and operator providing competing services.

4.44 The Airports Authority of India (Storage and processing of Cargo, Courier and Express Goods and Postal Mail) Regulations 2003 provide guidance on procedure and documents required for storage, processing and handling of cargo, levy and scale of charges, etc. at airports managed by AAI.

4.45 It is relevant to note that "Cargo handling" and "Cargo terminals" are listed as non-aeronautical services in the OMDA relating to Delhi and Mumbai airports.

Supplying Fuel to Aircraft

4.46 Services for supply of fuel to aircraft through common facilities are presently being provided at airports at Bangalore and Hyderabad. The common access facilities are also contemplated at Delhi and Mumbai airports. These facilities are available for use by other players on paying access fees / charges. In this context the OMDA between AAI and DIAL (Schedule 5), for example, covers services pertaining to "common hydrant infrastructure for aircraft fuelling services by authorised providers" as an Aeronautical Service.

4.47 The tariff determination for service provided for supplying fuel to the aircraft in such cases could relate to use of common access facilities.

4.48 However, at a number of airports, the supply of fuel to aircraft takes place through fuelling vehicles. In this context, tariff determination for service provided for supplying fuel to the aircraft could relate to tariff / charge pertaining to access to airside infrastructure.

Assessing Competition

4.49 As discussed above, there are cases where certain service providers (for providing ground handling services and cargo facilities) operate under a commercial constraint (competition from other players). In such cases, economic regulation may or may not be required to mimic competition.

4.50 In assessing the extent of regulatory intervention required in such cases, internationally, a key issue considered by the regulators has been to determine:

"*whether the operator of an airport has, or can be expected at some point in the future to have, the ability and incentive to raise prices, for an extended (or non-transitory) period, to levels that are significantly in excess of those likely to be observed in a reasonably competitive market (or to reduce quality of service to below the levels that might be expected in such a market)*"[19]

4.51 In such instances, an assessment of competition in provision of aeronautical services could be considered on an airport by airport basis with reference to studies (if undertaken).

[19] Manchester Airport Price Control Review – Policy Consultation, January 2007.

C. Single Till and Dual Till Approaches

4.52 It is a generally accepted principle, endorsed by ICAO[20], that airport users should pay their full and fair share of the cost of providing the airport. However, a modern airport is engaged in a complex mix of aeronautical activities (handling passengers and aircraft) and non-aeronautical activities (retail, catering, car parking, property rents). A critical question is whether, and to what extent, non-aeronautical activities should be taken into account in determining that fair share.

4.53 One approach is to adopt the 'single till' principle, where all airport related assets and costs are taken into account in determining allowed tariff rates or return or a general price cap, after considering all revenues from non-aeronautical services.

4.54 Single till approach does not make any distinction between aeronautical and non-aeronautical services at an airport and treats an airport as an integrated business and helps set airport charges so that the airport as a whole can generate appropriate returns for its investors. As a first step, total assets (aeronautical and non-aeronautical) are considered for allowing a certain return. The return is then adjusted for allowed depreciation and efficient operating expenditure (aeronautical and non-aeronautical). The adjusted return so obtained is then subsidized by the total non-aeronautical revenues to arrive at the net revenue required by the airport from aeronautical charges.

4.55 Effectively, single till uses profits from non-aeronautical activities at an airport to offset the aeronautical cost base for determining airport charges. Under this approach the allocation of costs between aeronautical and non-aeronautical services is less significant, given that the allowable revenue figure is based on total costs

4.56 An alternative approach is to adopt a 'dual till', in which the revenues, costs and assets of an airport are allocated between two heads – aeronautical and non-aeronautical. In a pure dual till, the 'regulatory till' is made up of revenues, costs and assets (and thus the costs of financing those assets) that are solely associated with aeronautical activities plus a share of the common costs and assets that support both aeronautical and non-aeronautical activities.

4.57 Variants of the pure dual till include hybrid approaches that reflect some of the revenues, costs and assets directly associated with non-aeronautical activities in the cost base for airport charges.

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[20] ICAO, the International Civil Aviation Organization, is the agency of the United Nations charged with administering the principles of the 1944 Chicago Convention on International Civil Aviation, ratified by India on 1 March 1947

4.58 It is generally supposed that, under conventional cost allocation methods, non-aeronautical activities generate a higher rate of return on their assets than the airport's cost of capital. As such, a dual till approach (pure or hybrid) may tend to lead to a higher computation of required airport charges.

Non-Aeronautical Revenues

4.59 In recent years, airports have tried to maximize the share of their revenue from non-aeronautical services. In most cases around the world, concession revenue has grown faster than aviation revenue; as a consequence, concession operations are now significant sources of revenues and profits for many major airports in the world.

4.60 ACI Airport Economics Survey 2008[21] reports that in North America the airports have grown their non-aeronautical revenue base in the range of 53% of the total revenue. The trend is also visible in the Europe and Asia Pacific airports where the non-aero revenues have been in the range of 47 to 50 percent.

4.61 The table below depicts the percentage share of non-aeronautical revenues[22] at select international airports:

Exhibit 4: Share of Non-Aeronautical Revenues at Select International Airports

Airports	% of Total Revenue (approx.)
Aéroports de Paris, ADP (CDG & ORY)	53
Airports of **Thailand** PLC (6 airports incl. Swarnabhumi)	43
APAC (Melbourne & Launceston)	52
Copenhagen	46
DAA (Dublin, Shannon & Cork)	57
Gatwick	48
Hong Kong	39
MAHB (20+ airport incl. KLIA)	49
Munich	47
Sydney	51
Toronto	22
Vancouver	38
AAI (80+ airports)	39[23]
DIAL	41

Source: Latest Annual Reports of Airports or Airport groups

[21] The ACI Airport Economics Survey 2008, 13th edition, is based on financial data submitted by 565 airports, which together represent 73 percent of traffic worldwide (3.5 billion passengers).

[22]The table includes non-aeronautical revenues received from commercial retail, rentals, property and other airport services.

[23] Includes income from Public Admission Fee, Trading Concessions, Rent & Services, Income from leasing of airports and other miscellaneous income.

4.62 While a large number of airports in several regions of the world have actively developed revenues from non-aeronautical activities, in some other regions their development still appears to be below its potential, taking into account such factors as the overall volume of traffic and high share of international traffic. In this context, it has been observed that as airport traffic increases, not only do revenues from non-aeronautical activities tend to increase in absolute terms, but their share of total airport revenues also tends to increase compared to revenues from charges on air traffic. At some airports, however, inadequate terminal space management and lack of terminal space, as well as of financial resource can contribute to low levels of non-aeronautical development (ICAO Doc 9562, paragraph 6.2 refer).

4.63 Under a regulatory regime, whether single or dual till, the development of non-aeronautical revenues remains a major source driving profitability of the airport. Incentives to maximize sources of these revenues, thereby, remain key considerations for most regulators around the world.

4.64 ICAO's policies on airport charges (Doc 9082) recognizes the continuing importance of revenues from non-aeronautical activities, and, recommend the full development of such revenues except in the case of concessions directly associated with the operation of air transport services such as fuel, in-flight catering and ground handling (Doc 9082, paragraph 40). In addition, ICAO Airport Economics Manual provides further guidance by stating:

"*.. that revenue from non-aeronautical activities are in fact the principal means by which a number of airports are able to recover their total costs, because their profits from these activities more than cover the losses that most of them incur on their airside operations. This does not mean, however, that aeronautical activities are inherently unprofitable. In some instances, the reason why these revenues appear not to cover the operating costs is often due to the fact that airport operators have set aeronautical charges to a level that does not allow for the proper recovery of these costs. A delicate balance has to be found, taking into account, inter alia, the fact that the development of non-aeronautical revenues should not in any way compromise safety or security on airport land and premises, and that the primary role of an airport is to facilitate air traffic.*"

Indian Airport Concession Agreements

4.65 Section 13 of the Act requires AERA to take into consideration "the concession offered by the Central Government in any agreement or memorandum of understanding or otherwise" in determining the tariff for aeronautical services.

DIAL and MIAL

4.66 The principles of tariff fixation are set out in Schedule 1 of each of the respective State Support Agreements with DIAL and MIAL.

4.67 Clause 3 of the agreements sets out the support GOI undertakes to provide to the JVC. In sub-clause 3.1.1, GOI confirms that it shall made reasonable endeavours to procure that AERA shall regulate and set charges in accordance with the broad principles set out in Schedule 1.

4.68 In this context, Schedule 1 sets out a number of principles to be observed. Among other things, these relate to incentives-based regulation, the need to generate sufficient revenue to cover efficient costs and risk-related rates of return on investment, transparency and consistency.

4.69 Schedule 1 also sets out a methodology for calculating the aeronautical charges in the "shared till inflation-X price cap model". The methodology describes a modified dual till approach that identifies the cost base as:

- the operating and maintenance costs pertaining to Aeronautical Services, and
- depreciation and returns on a regulatory asset base pertaining to Aeronautical Assets,

defrayed by:

- 30% of the gross revenues generated from Non-Aeronautical Assets
- 30% of the gross revenues generated from assets required for provision of aeronautical related services at the airport and not considered in revenues from Non-Aeronautical Assets (e.g. Public admission fee etc.) (implicitly those that are not covered by the definition of aeronautical charges and that are not otherwise included in revenues from Non-Aeronautical Assets).

BIAL and HIAL

4.70 The principles of tariff fixation are set out in Clause 10.2.4, 10.2.1, Schedule 6 of the Concession Agreements. The Schedules and relevant clauses are substantially the same in each agreement.

4.71 These specify that the airports shall be entitled to levy Landing Housing and Parking charges, Passenger Service Fee and User Development Fee at rates consistent with ICAO Policies. Clause 10.3 further establishes that the airports are free to set charges in respect of facilities and services provided at the airport other than those facilities and services in respect of which Regulated Charges are levied.

4.72 Schedule 6 also identifies the charges that are to be adopted by BIAL and HIAL at the time of Airport Opening. The Landing, Housing and Parking Charge and Passenger Service Fee (Domestic and International) to be adopted at the time of airport opening was to be higher of:

(a) The AAI tariff effective 2001 duly increased with inflation index, as set out hereunder, upto the airport opening date; Or

(b) The then prevailing tariff at the other AAI airports.

BIAL and HIAL opted to apply the prevailing tariff at the other AAI airports on the airport opening date(s), instead of the inflation indexed tariff which would have been on a higher side.

UDF was to be allowed to be levied with effect from the airport opening date, from embarking domestic and international passengers, for the provision of passenger amenities, services and facilities.

Relevant provisions in the Airports Economic Regulatory Authority of India Act, 2008

4.73 The functions of AERA, defined in section 13 of the Act, specify that it shall determine the tariff for the aeronautical services taking into consideration, among other things, "*revenue received from services other than the aeronautical services*". As discussed earlier, aeronautical services are also defined under the Act.

ICAO Principles

4.74 ICAO's current airport charging policy[24] states that

The cost to be shared [in airport charges on users] is the full cost of providing the airport and its essential ancillary services, including appropriate amounts for cost of capital and depreciation of assets, as well as the costs of maintenance, operation, management and administration, but allowing for all aeronautical revenues plus contributions from non-aeronautical revenues accruing from the operation of the airport to its operators.

4.75 ICAO's Airport Economics Manual[25] provides guidance on the interpretation of its charging policy for :

The existence of air traffic activity is a necessary precondition for the generation of airport non-aeronautical revenues. Such revenues are then generated through management initiatives in offering suitable products and prices. All aeronautical and non-aeronautical revenues from the operation of an airport accrue, in the first instance, to the airport. Reaching a common understanding on the contributions of non-aeronautical revenues to defray the cost base for charges is an acknowledgement of the partnership between airports and users.

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[24] ICAO Doc 9082/8, paragraph 30

[25] ICAO Doc 9562/2, Chapter 4, Section D, Page 4-15 – Interpretation of paragraphs 22 i) and 22 vii) in ICAO's policies on Charges for Airports and Air Navigation Services (Doc 9082/7) (paragraphs 22 i) and 22 viii) ICAO's policies on Charges for Airports and Air Navigation Services (Doc 9082/8)

4.76 ICAO's guidance also states:

> *When determining the contributions from non-aeronautical revenues, high priority should be given to the investment needs of airports, taking into account paragraph 24 of Doc 9082/7 [paragraph 32 of revised edition - 9082/8], which addresses pre-funding of projects, while recognizing that there may be many alternatives to finance infrastructure development.*

4.77 In this way, ICAO's principles acknowledge that non-aeronautical activities can be attributable to users of aeronautical services, and can offset the cost of providing those services, but subject to consideration of the airport's investment needs and the basis of sharing risks between the airport and its users.

IATA's Position

4.78 In its February 2007 position paper, IATA[26] "strongly supports the single till principle", and outlines the safeguards relating to allocation it would expect if a dual till approach is nevertheless imposed.

ACI's Position

4.79 In its November 2009 Policy and Recommended Practices Handbook, ACI states that

> *"Airports are strongly encouraged to develop non-aeronautical activities and maximize non-aeronautical revenues at their facilities. There should be no requirement to use non-aeronautical revenues to reduce airport user charges, a practice known as the "single till", although some airports may deem a full or partial use of non-aeronautical to defray aeronautical charges as appropriate or necessary to increase their competitiveness or to meet not-for-profit requirements."*[27]

Advantages and Disadvantages of Single and Dual Till Approaches

4.80 The main arguments put forward for dual till approaches relate to investment incentives, efficient pricing and the development of commercial revenues. The academic support for dual-till approaches is mixed and the experience of major regulators is also varied.

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[26] IATA, the International Air Transport Association, is an international trade body representing airlines currently comprising 93% of scheduled international air traffic (source www.iata.org)

[27] *ACI Policy and Recommended Practices Handbook | Seventh Edition | November 2009 (refer clause 1.13, Section 1, page 8)*

Academic analysis

4.81 There is strong academic support for the view that, for airports with capacity constraints (often called "congested airports") where regulated prices are below market-clearing levels (evidenced, for example, in high slot valuations and/or high levels of congestion), a dual till would help reduce the inherent pricing and allocative inefficiencies that result[28].

4.82 In principle, provided non-aeronautical activities can generate above-normal profits for the airport operator, a dual till would create incentives for the operator to create additional capacity at a capacity-constrained airport to maximise the numbers of passengers (or freight volumes) paying for non-aeronautical services. Empirical analysis suggests this effect is real and that the effect of capital underinvestment in congested airports under a single till reduces overall productivity[29].

4.83 Other analyses suggest that, at uncongested airports, the single-till regulation comes closer to maximizing welfare than dual-till regulation[30].

4.84 Recent economics literature has analysed airports in the context of two-sided markets, showing how efficient prices for each side of the market will generally not reflect relative costs but rather the value placed on each side of the platform by participating in the market[31].

4.85 The academic arguments are well described in a recent discussion paper[32].

Regulatory Experience – UK

4.86 A key debate on this subject took place in the UK over the period from 2000 to 2003. Ultimately, the CAA's proposal for introducing a dual-till approach was rejected by the Competition Commission. Its grounds for rejecting the proposal[33] were that

- there was a lack of compelling evidence that a dual till approach would have beneficial incentive properties;

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[28] Stephen Littlechild, 2002, 'Competition Commission: BAA London Airports Inquiry', IEA Discussion Paper

[29] Tae Hoon Oum, Anming Zhang, and Yimin Zhang, 2004, 'Alternative Forms of Economic Regulation and their Efficiency Implications for Airports', Journal of Transport Economics and Policy

[30] Achim Czerny, 2006, 'Price-Cap Regulation of Airports: Single-till versus Dual-till', Journal of Regulatory Economics

[31] 'The Evolution of Airport Ownership and Governance', David Gillen, 2009

[32] Tae Oum & Xiaowen Fu, 2008, 'Impacts of Airports on Airline Competition: Focus on Airport Performance and Airport-Airline Vertical Relations', Discussion Paper 2008/17, OECD/International Transport Forum

[33] Originally set out in its 11 July 2002 statements on "Current Thinking on Dual Till Proposals"

- the impact on user charges would be substantial and would require compelling evidence to justify;
- there is a conceptual difficulty in separating aeronautical and commercial activities at an airport (commercial activities at an airport economically depend on the aeronautical assets and aeronautical activities);
- it is difficult, in practice, to allocate both investments and operating costs between aeronautical and commercial activities;
- to the extent that some of the judgements that have to be made for allocating investments and operating costs are arbitrary, future disputes about cost allocation could harm relations between the airports and their users.

4.87 The Competition Commission confirmed those grounds most recently in its 2007 review into Heathrow and Gatwick and its 2008 review into Stansted.

Regulatory Experience – Australia

4.88 The complexity and perceived arbitrariness of dual till cost allocations and the eligibility of charges for the price cap and their implications for intrusion into highly specific issues under a cost-based price cap approach were described in a 2001 submission by Peter Forsyth of Monash University[34]. These issues, among others, led Australia towards a 'light touch' regulatory approach for its airports focused on price monitoring, retaining a dual till concept but avoiding the need for formal price control.

4.89 Although the industry is split broadly along airport-airline lines as to the success of the approach, the Productivity Commission concluded[35] that light touch regulation had created a more favourable investment environment at the airports, in part by avoiding the hurdles to investment caused by the price control process. However, it acknowledged that "a desire to sustain and build non-aeronautical revenues is unlikely to be a significant constraint on aeronautical charges" and that the approach still needed a credible threat of a return to price control.

[34] Peter Forsyth, 2001, 'Airport Price Regulation: Rationales, Issues and Directions for Reform', Submission to the Productivity Commission Inquiry

[35] 'Review of Price Regulation of Airports Services', Productivity Commission Inquiry Report, 2006

Regulatory Experience – South Africa

4.90 The approach to regulating tariffs at the Airport Company of South Africa is described in the Regulating Committee's approach[36].

> "*The common or single till approach is followed in that no distinction has been made between relevant (aeronautical) and non-relevant (non-aeronautical) revenues and costs. All revenue has been pooled to offset total costs, with the purpose of encouraging the development of non-relevant revenue streams while forcing the tariffs charged for the supply of relevant services towards their most efficient levels.*"

Regulatory Experience Elsewhere

4.91 It is evident in the number of airports operating under dual till pricing regimes that the sorts of issues highlighted in particular by the UK's Competition Commission are not necessarily compelling arguments against dual till pricing. It is not always clear in these cases whether price setting is carried out under transparent regulatory conditions, whether the price caps are binding in practice or whether prices are regulated at an airport level or at a group of airports. In some cases, tariffs are determined in part through negotiated arrangements between airports and airlines rather than solely with reference to cost-based calculations.

4.92 A summary of till treatment for certain regulated airports has been presented at Appendix 2.

4.93 The issue of till treatment is not relevant for many other airports that are not subject to formal economic regulation.

Approaches to Different Airports Contexts

4.94 It may need to be considered whether a particular approach to the issue of till be applied to all major airports together or the approach be considered separately for each airport. The decision factors on regulatory approach on this aspect vis-à-vis different airports may include:

- The presence or otherwise of capacity constraints that are outside the control of the airport;
- Requirement for giving incentives for foreseeable investments at airports;
- The extent of and scope for the airport to develop the commercial opportunities at the airport;

[36] 'Approach to the 2010/11 to 2014/15 permissions', Regulating Committee to ACSA and ATNS, April 2009

- The scope for the airport to raise non-aeronautical charges for services that are not subject to competition or other commercial constraint;
- The priorities and expressed views of users at the airport;
- The basis of setting charges envisaged in terms of any concession arrangement covering the airport;
- The extent to which the airport has adopted or can adopt best practice cost allocation systems for reporting and forecasting.

Allocation Basis

4.95 Operating expenditure, revenues and assets may need to be allocated between aeronautical and non-aeronautical activities in case dual or hybrid till approach is adopted. The allocation methodology would need to be specified in terms of scope of activities within each till, the methods of identifying and recording direct costs, revenues and assets with respect to such activities and the basis of allocating shared and common costs and assets.

4.96 Compliance with the methodology would also need to be verified vis-à-vis annual reporting of operating expenditure, revenues and assets in respect of forecasts for determination of airport tariffs. In accordance with international regulatory best practice, requirement for independent audit of operating cost, revenue and asset allocations could be considered.

4.97 ICAO Airport Economics Manual (Doc 9562) provides guidance to States, to airport managing and operating entities, and designated charging authorities, to assist in the efficient management of airports and in implementing ICAO's policies on charges for airports and air navigation services (Doc 9082). The chapter 4, part A of the Economics Manual provides further guidance on determining the cost basis for charges on Air Traffic, while also determining total airport costs including costs attributable to non-aeronautical activities.

Cost Basis for Individual Charges

ICAO Airport Economics Manual (Doc 9562) suggests that once the costs attributable to civil air traffic has been established and, if required, divided into their international and domestic components, the cost basis for individual charges can be applied to following charges:

- Charges on Air Traffic: *Landing Charges, Lighting Charges, Approach and Aerodrome Control Charges, Aircraft Parking Charges, Aerobridge Charges, Hangar Charges, Passenger Service Charges, Cargo Charges, Security Charges, Noise Related Charges, Other Charges and Pre-Funding Charges*

The document also provides guidance on determining the costs attributable to concessions and other aeronautical activities including fuel concessions and ground handling.

In this context, account should be taken of the ICAO's policies on charges in Doc 9082/8, paragraph 34 v), "A single charge should be applied for costs of as many as possible of airport provided facilities and services for normal landing and take-off of aircraft…"

D. Fair Rate of Return

4.98 The setting of tariffs for aeronautical services in respect of major airports would need to consider the reasonable expectations of investors of a fair rate of return. As with any commercial investment, such a rate of return may need to have reference to the level of performance.

4.99 In determining a fair rate of return, developments in financial theory and practice, the need for an evidence basis for assessments and a dialogue with the investors and other interested parties is necessary. A fair rate of return, sometimes called the cost of capital, would need to be sufficient to attract funds for investment in airport facilities. This is an important parameter in determination of airport tariffs.

4.100 In broad terms, the fair rate of return would need to reflect the quality of risks faced by investors in regulated airports in India. It could also be affected by the level of access of airport companies to financial markets in India and elsewhere, the state of those markets and the quality of information available to those markets on investment risks in regulated Indian airports.

4.101 The process of regulation, could itself significantly protect investors from key aspects of risk. Notably, the periodic review of airport and aeronautical services tariffs provides mechanisms for risk to be shared between an airport and its users – subject to safeguards to protect users.

4.102 To inform assessments and in recognition of the central importance of the cost of capital issue, analyses and dialogue with interested parties is expected, in order to:

- understand the commercial and financial risks involved in airport operations and investment, and
- understand and improve the impact of regulation on risk and the balance of risk between users and airports

4.103 At the current time, regulatory precedents indicate:

- Employing the 'Capital Asset Pricing Model' to determine a cost of equity;
- Reviewing debt market evidence to determine a cost of new debt;
- Reviewing existing debt commitments; and
- Determining an appropriate weighted average cost of capital.

4.104 The following aspects may need to be considered in determining the fair rate of return:

- Impact on the cost of capital of different risks associated with different policies;
- The circumstances of different airports;
- Assessment of cost of capital for Government owned airports and air navigation services with access to capital on different terms to other companies;
- The basis and extent to which the costs of existing debt should be reviewed;
- Whether the balance between debt and equity at airports should be reviewed and an appropriate or normative 'gearing ratio' be determined;
- Whether to assess a 'pre-tax' rate of return incorporating the cost of tax or a 'post-tax' rate of return;
- In accordance with the basis for maintaining the RAB, whether to apply the fair rate of return in real or nominal terms.

E. Capital Investment

4.105 Typically airport and air navigation services investments are lumpy investments made for an asset life much longer than a regulatory review period.

4.106 Capital investments address diverse needs and not all may demonstrate immediate operating benefits or be fully utilised over the short term. For instance, investments could be made to support prospective demand growth, improve quality of services, improve safety, enhance reliability etc.

4.107 Certain investments could also be mandated from safety or security regulation point of view. For instance, DGCA and BCAS, being responsible for regulation of safety and security related aspects at Indian airports could prescribe use of certain equipment / methods requiring investments by airport operators and air navigation service provider. Such investments may need to be considered as such in the process of tariff determination.

Experience in India

4.108 AAI prepares Master Plans and capital expenditure requirements for its airports as well as air navigation service provision. Presently, consultations with airlines and local authorities could be limited in absence of any set procedure. The Master Plans / projects are submitted to AAI's Board for approval. AAI is a Category I Mini Ratna company and AAI's board is competent to approve capital investment up to Rs. 500 Crores. Proposal for capital investments above Rs. 500 Crores are to be approved by the

Government of India on the recommendations of the Expenditure Finance Committee (EFC) /Public Investment Board (PIB).

4.109 For the two Greenfield airports at Hyderabad and Bangalore, Master Plans formed part of the agreement. In addition, specifications of each of the main buildings and components of the airfield were set out, not just in terms of area but also in terms of finishes, lighting levels, etc. These Master Plans have also been subsequently revised and approved by Government of India.

4.110 The OMDAs for Delhi and Mumbai specify:

- Mandatory capital projects to be undertaken by the JVC;
- The provision of a Master Plan for 20 years including traffic forecasts, trigger points for capital projects and a number of other matters;
- Development principles such as safeguarding for a rail link, common user terminals and runway capabilities;
- A raft of planning standards, including aiming for the IATA Standard C in terminal buildings;
- An overall passenger rating of quality similar to the best five airports in Asia of a similar scale and size.

4.111 Clause 8 of Schedule 1 to the SSAs for Delhi and Mumbai also provide that

"*AERA will accept the Master Plan and Major Development Plans as reviewed and commented by GoI and will not seek to question or change the approach to development if consistent with these plans. However, the AERA would have the right to assess the efficiency with which capital expenditure is undertaken.*"

4.112 The master plans for Delhi and Mumbai have been approved and a substantial capital investment has already been made.

4.113 In the above context, while Section 13 (1) (a) (i) of the Act provides for the consideration of capital expenditure incurred in the determination of tariffs, the regulatory process for consideration of the capital investment plans to ensure efficient planning and implementation may itself need to be considered.

User Consultation – International Experience

4.114 Efficient investment means delivering assets that meet users' needs in a timely manner at an efficient cost.

4.115 ICAO Airport Economics Manual outlines, in paragraph 2.56 and 2.69, that regulation of monopoly airports can be enhanced by arrangements that foster meaningful engagement by users in the process of planning capital investment

and that improved consultation, based on effective information disclosure, should be a basic requirement of regulation.

4.116 Paragraph 24 of ICAO Doc 9082/8 states:

"The Council also considers it important that users or their representative organizations be consulted concerning capacity development and investment plans. The purpose of such consultation is to ensure that the developments proposed meet the needs of users and that users are aware of the financial implications in terms of the charges they would have to pay. Similarly, in order that providers may better plan their future financial requirements, users, particularly air carriers, should for their part provide advance planning data to individual providers on a 5- to 10-year forecast basis relating to future types, characteristics and numbers of aircraft expected to be used, the anticipated growth of aircraft movements, passengers and cargo to be handled, and other relevant matters."

4.117 Paragraph 7.16 of ICAO Doc 9161[37] states:

"*With the application of economic pricing principles, it is necessary to ensure that the determination of charges be done in a transparent manner, facilitating user consultation. Users should have the opportunity to review the process in which charges are set and offer comments on the approach employed.*"

4.118 International experience suggests that regulators play an important role in structuring the process of information exchange, discussion and negotiation that is inherent in effective consultation.

4.119 In this regard, the experience of the UK CAA may be relevant. In its most recent review, of airport charges at Stansted Airport concluded in March 2009, CAA recognised that consultation associated with major capital expenditure can often be inadequate and that "some of the current tensions around consultation relate to differing interpretations of what is reasonable and unreasonable information to exchange"[38].

4.120 Effective consultation depends on exchange of adequate information at important stages in the planning process to inform decisions. A regulator may find it appropriate to specify minimum standards of information exchange and consultation.

[37] Manual on Air Navigation Services Economics, Doc 9161, Fourth Edition — 2007

[38] Economic Regulation of Stansted Airport 2009-2014, CAA Decision, March 2009, paragraph 6.17 refer

4.121 In the case of Stansted, as with the other regulated airports, the CAA has specified an information protocol that addresses two levels of information. These are an overall strategic business plan that puts the investment needs into context, and detailed information on individual projects. This information must link back to a robust business case justifying future capital expenditure.

4.122 For major projects, the CAA information protocol specifies that consultation is required at the option assessment stage, requiring cost benefit analyses of the capital investment options and a meaningful process for users to inform that assessment.

4.123 The CAA envisages that consultation will be facilitated through a consultative body of the airport, its airlines and other users under terms of reference approved by the regulator. The consultative body periodically reports to the regulator on the process and on any unresolved disagreements.

4.124 In South Africa, the Regulating Committee to ACSA and ATNS requires that the regulated companies consult with the airlines body with a view to determining a jointly agreed capital expenditure plan.

4.125 In Ireland, for the most recent review of Dublin airport, the Commission for Aviation Regulation issued a guidance paper outlining its preferred approach to airport-airline consultation. However, a newly formed capital expenditure consultative committee of airport and airlines expressed a lack of confidence in the airport's consultation process and the airport considered the process was hindered by other procedural issues it encountered. Following a failed attempt to put in place an independently chaired consultation process between the airport and airlines, the regulator undertook its own consultation with users on the airport's plans and procured a firm of consultants to carry out technical analysis.

Planning Standards

4.126 Generally capital expenditure is planned to meet certain safety and planning standards. In the context of private airports in the country, the principal ones are listed in the OMDAs for Mumbai and Delhi airports. Prominent among other planning standards is the IATA Airport Development Reference Manual (ADRM).

4.127 Typically essential ingredients in Master Planning are:

(a) Consideration of an appropriate planning horizon;

(b) Forecasts of busy / peak hour or "design hour" demand and capacity for particular facilities;

(c) Target level of service over the planning horizon.

Recently, the Secretariat for the Committee on Infrastructure, Planning Commission, Government of India published "Norms and Standards for Capacity of Airport Terminals" (January 2009). The norms and standards specified in the report were expected to serve as a guideline for formulation and implementation of projects by AAI[1]. The report identified following issues as key to planning of Airport Terminals and recommendations:

- **Growth rate for Traffic Projection** - The recommendations contained in the Manual on Air Traffic Forecasting (Doc. 8991, Part I) were adopted. It was also recommended that:

  Keeping in view the trend in air traffic in last few years, a span of five years be adopted for the projects planned during the current five year plan period, i.e., upto 2011- 12. Thereafter, as the growth rate stabilizes, the span for making projections should be increased to 7 years for a more realistic assessment.

- **Target year for capacity creation** – The report notes that infrastructure projects are capital intensive with long gestation periods and have to be planned with a long term perspective, and that airport terminals are designed to cater to peak hour passenger traffic in the design year. The report noted that for some years the terminal could handle passengers below its capacity. Balancing these factors, it was recommended norms to be adopted for capacity creation such as:

  Smaller airports (< 5.0 mppa) – 10th year from Planning year.

  Bigger airports (> 5.0 mppa) – 7th year from Planning year.

  (mppa – million passengers per annum)

- **Peak hour projections** – The report recommended that

  Methodology given in ICAO Manual on Air Traffic Forecasting by finding ratios from historical data and recent studies be adopted. As per ICAO Manual, forecasts of peak period passengers are to be obtained from annual forecast by applying ratios of busy period traffic derived from actual data at various airports.

  In absence of actual data, ratios for estimating peak hour traffic have also been suggested in the report.

- **Level of service in target year** – The report recommends Level of service 'C' as per IATA Airport Development Reference Manual (Jan 2004) for design for target demand in the design year based on consideration of unit area norms. The report noted that:

  … this level could be used for design for target demand in the design year.

... contd

- **Unit Area Norms** – The report noted that overall space / area norm should be sufficient to provide a reasonable level of service for various components in a Terminal Building while recognising that certain airports in the country handle low traffic. Accordingly the report recommended unit area norms of different kinds of terminals and terminals with different traffic levels.
- **Unit cost of construction** - In this regard, the report notes that:

  The cost of construction is, however, dependent upon various variables. It is easily impacted by locational factor. Therefore, it may not be possible to lay down any general norms in this regard. It is, at the same time, important to benchmark the cost of construction across projects being implemented with similar planning horizon.

4.128 The above considerations are inevitable in periodic large, lumpy investments. To control the degree of redundancy, user consultation, especially with airlines, could be employed for inputs on likely annual demand and peaking patterns.

4.129 Another important input to capital investment planning could be information on current achieved operational standards, which could help to identify "pinch points" and the need for alleviating capital investment.

Incentives for Efficient Investment

4.130 By specification of a mechanism of considering asset additions to a Regulatory Asset Base (discussed later in this document), a regulator can provide confidence and certainty to investors on their ability to earn a fair rate of return on capital investment projects undertaken by them. Such a mechanism can provide a form of guarantee for investors in regulated airports that is not afforded to investors in most commercial enterprises. Hence, safeguards / incentives are required to be considered to protect and promote users' interests.

4.131 Also, the calculation of a RAB even under a Price Cap form of regulation does not, by itself, provide strong incentives for efficient investment. However, Price Cap regulation in this case does provide reasonably strong incentives for an operator to procure assets at lower cost than forecast at the time of a price review, but it does not directly help ensure those assets meet users' needs cost effectively and in a timely manner.

4.132 Instead, the quality of the consultation process that the operator has undertaken could be considered. If the consultation process has been effective such that users have had a meaningful input to all material aspects of the investment plans, the planned investment could be expected to be reasonably

efficient. In such cases, regulatory scrutiny may be required only to a limited supplementary review of the plans.

4.133 If the consultation process has not been effective such that a regulator cannot place substantial reliance on it, regulators often carry out a more detailed scrutiny and challenge of the investment plans. In the extreme case, where the regulator considers there is insufficient evidence that a proposed project would meet users' needs on a cost effective basis, it may make adjustments to the forecast capital expenditure and/or qualify the extent to which that investment will be incorporated into the RAB.

4.134 Efficient planning and implementation of capital investments would need to take into account assessment of needs of users as well as the issue of appropriate timing of investments.

4.135 To create incentives for operators to determine an efficient investment programme that best meets users' needs – delivering cost effective service capability in a timely manner, safeguards may need to be provided in terms of:

- Institutionalising meaningful engagement with users in the development of the investment plans, ideally through a continuous consultation process led by the airport company / air navigation service provider;
- detailed regulatory scrutiny, if required, of the proposed investment programme.

F. Operating Expenditure

4.136 Operating expenditure constitutes one of the building blocks in deriving regulated tariffs. Key aspects for formulation of regulatory approach in dealing with operating expenditure pertain to assessment of operating expenditure over the price review period and incentives for reducing operating expenditure.

Assessment of Operating Expenditure

4.137 At the time of each price review, an assessment of the forecast operating expenditure may be required to determine a cost basis for tariff setting.

4.138 Such an assessment can be informed by:

- Historical information on operating expenditure;
- The airport's / air navigation service provider's own forecasts of operating expenditure, reflecting their service, investment and process improvement plans;

- The principal factors that drive operating expenditure and forecasts of those factors;

- Process and performance indicator benchmarks in the Indian airports sector;

- The rates of efficiency improvement that are evidenced in other sectors following the adoption of economic regulation and the underlying rates of efficiency improvement that are evident in the wider economy.

4.139 The assessment of operating expenditure may need to take into account the quality of information available, the uncertainties involved, the need to provide effective incentives and the interests of both investors and users.

Incentives for Efficiency Improvement

4.140 Under a Price Cap (CPI-X) regime (discussed earlier in this document) there are inherent incentives for an operator to make savings in its operating expenditure beyond the level of savings mandated in the price cap itself. These work by permitting the operator to keep additional surplus for the duration of a price control period. In this way, the operator is incentivised to improve operating efficiencies and make savings.

4.141 At the end of the regulatory cycle, the new review would then start with these lower costs, and everything else being equal, would result in lower tariffs for users. Such efficiency improvements, thus, contribute to gains for the investor as well as users, in due course.

4.142 Such an incentive based regulatory regime should not create distortions by way of encouraging airport operators and air navigation service provider to save costs at the expense of service levels. This can, in one way, be ensured by prescribing appropriate service levels and linked incentives. For instance, the formula under a Price Cap regime can be modified to include a term linked to service performance. This aspect has been discussed further in the Service Quality Monitoring section of this document.

Cost pass through

4.143 As discussed in the paragraph 4.107, some safety / security related costs may be mandated by other regulatory authorities like DGCA and BCAS. It may be appropriate to exclude such costs from the incentive regime by implementing a pass-through mechanism. In this way, increases or reductions in those costs are reflected in changes to the level of airport / air navigation service revenues, either within the year, in the following year or in the following control period. This reduces the airport company's / air navigation service provider's financial exposure to the risks involved.

G. Service Quality Monitoring

4.144 A key function of AERA under the Act, as per Section 13 (1) (d) is:

> "*to monitor the set performance standards relating to quality, continuity and reliability of service as may be specified by the Central Government or any authority authorised by it in this behalf*"

4.145 Neither the Government of India nor any agency on its behalf has presently specified any performance standards for airports on a uniform basis.

Experience in India

4.146 For some years, AAI has been collecting passenger satisfaction measures under the ACI Airport Service Quality (ASQ) program, (previously the AETRA program conducted jointly with IATA). Some thirty service elements are graded on a scale of 1:5, with 3.5 being generally considered satisfactory.

4.147 The OMDAs for Mumbai and Delhi airports specify service standards and penalties that become payable for failure to achieve standards (presented at Appendix 3). Notable points are:

- Over 20 objectively-measured standards are quoted;
- Also over 20 subjectively-measured standards are quoted, to be evaluated from the AETRA, now ACI, survey;
- Many elements are outside the control of the airport operator – such as security, dwell time, check-in and baggage delivery;
- Failure to achieve standards could lead to penalty payments. In such a scenario, up to 4% of airport revenue, both aeronautical and non-aeronautical, could be at risk.

4.148 Service standards are defined for Bangalore and Hyderabad airports in similar terms in the respective Concession Agreements (presented at Appendix 3). Passenger satisfaction is measured for 18 elements. After two years of operation, the airport is required to achieve a score of 3.5 on those elements under its control. In the event of failure, there has to be a remedial plan. Successive tests of failure could lead to the payment of liquidated damages and ultimately to withdrawal of the concession.

International Practice

4.149 In the UK, from the first review carried out for charges effective 1991, the CAA has progressively intensified the attention it gives to service quality. It encouraged the development of Service Level Agreements (SLAs) between airports and airlines. In 2003 it went further and introduced penalties, payable to airlines.

4.150 In its latest determination for London Heathrow, for charges effective 2008, the CAA has imposed service standards in up to 19 areas, depending on the terminal. Failure to achieve the standards (in all but one of the cases) will lead to rebates of charges, payable to the airlines. Overall, up to 7% of revenue charges could become payable on account of failure to achieve standards. In the first twelve months, some £7mn (nearly 1% of charges revenue) was payable. Summary of CAA decision for service quality standards and rebates is presented at Appendix 4.

4.151 Also, six of the standards so specified could result in a bonus (presented at Appendix 4) by way of increased charges payable by airlines. Up to an extra 2.24% of airport charges can be earned.

4.152 At Dublin Airport, SLAs had existed for some time. The regulator's determination for 2010 includes 13 service elements for which rebates could become payable to airlines, with up to 4.5% of charges revenue potentially payable (presented at Appendix 4).

4.153 In Australia, no standards are set by the regulator, but there is an extensive system of monitoring by the Australian Competition and Consumer Commission (ACCC). Templates are provided to the operators in the form of spreadsheets. Reports are published annually (presented at Appendix 4).

- Airports are required to report on 46 physical measures. Not all of these are service measures. They include items such as peak traffic flows, car park throughput etc.
- Airports are also required to report on 23 measures of passenger satisfaction derived from surveys. Items not under the control of the airport, such as immigration, are included.
- Airlines also report, airport by airport, and terminal by terminal, on their satisfaction levels on a similar scale of 1:5. Items included are runways, taxiways, apron, ground handling and terminal facilities. They also comment on the responsiveness and approach of the airport management.

Setting and Monitoring of Standards

4.154 While determining tariffs different service quality parameters may need to be considered for setting up of a synchronised incentive regime. For instance, linkage of the overall incentive regime to service quality may be required to prevent incentives for the airports operators / air navigation service provider to save on costs at the expense of service levels.

4.155 Various objective and subjective service quality parameters and performance standards could be considered in terms of the area of service they help monitor, importance to users, control of the service provider over area of service, etc.

4.156 The monitoring mechanism would need to be specified in terms of the reporting requirements of the operators, the periodicity of reporting required, the steps the regulator would like to undertaken to assure authenticity / veracity of reporting from operator, etc.

Compliance and Actions

4.157 While Section 13 (1) (d) of the Act provides for the monitoring of set performance standards, the Act does not have any provision for levy of penalties on operators for non-compliance with set performance standards.

4.158 However the tariff structure can itself be linked to performance. Even under the Price Cap regime, the CPI-X formula can be extended to incorporate specific adjustments that are useful for the purposes of such monitoring and regulation.

4.159 For example, a term for incentivising improvements in service performance could be introduced such that the formula takes the form CPI – X + Q, where Q identifies a percentage increase in the revenue parameters (yield per passenger) to reflect above-expected service improvements. Q could be negative in the event of below-expected service improvements.

4.160 An alternative approach in respect of below-expected service improvements could be to compute tariff rebates that would be repayable by the operator to users in respect of the year in which service levels suffered. Where above-expected improvements only are to be incorporated in the price cap, the Q term becomes a bonus term (it is designated 'B' in the conditions as to airport charges for Heathrow and Gatwick).

4.161 In the examples presented at Appendix 4, the maximum percentage changes in yield per passenger are identified in the tables for Heathrow, Gatwick and Dublin.

4.162 There would, however, be no simple method to determine appropriate scales for different components of service performance in a Q term (or a B term and rebates). In the examples in the Appendix, regulators have adopted a pragmatic approach in which a suitable upper performance limit and a lower performance limit is identified for each service measure and an amount of 'revenue at risk' is judged appropriate for that range of performance. The regulators made such judgements on an informed basis through consultation with users as to the relative importance of each component and suitable performance ranges.

H. Form of Price Control and Tariff Structure

Present Framework

4.163 Historically, tariffs for aeronautical services at Indian airports had been determined by Airports Authority of India (AAI) as sole provider of airport services. The charges for these services were approved by Ministry of Civil Aviation (MoCA) in consultation with AAI.

4.164 The major airports (listed earlier) can be broadly classified as under:

- Brownfield airports (earlier AAI airports), for which concession has been offered by the Central Government in any agreement or memorandum of understanding;
- Greenfield airports;
- AAI airports, which are managed and operated by Airports Authority of India.

4.165 Section 22 of the Airports Authority of India Act, 1994 states:

The Authority may,-

(i) With the previous approval of the Central Government, charge fees, or rent-

(a) for the landing, housing or parking of aircraft or for any other service or facility offered in connection with aircraft operations at any airport, heliport or airstrip;

Explanation. - In this sub-clause "aircraft" does not include an aircraft belonging to any armed force of the Union and "aircraft operations" does not include operations of any aircraft belonging to the said force;

(b) for providing air traffic services, ground safety services, aeronautical communications and navigational aids and meteorological services at any airports and at any aeronautical communication station;

(c) for the amenities given to the passengers and visitors at any airport, civil enclave, heliport or airstrip;

(d) for the use and employment by persons of facilities and other services provided by the authority at any airport, civil enclave heliport or airstrip;

4.166 Section 22 A of the Airports Authority of India Act, 1994 states:

The Authority may,

(i) after the previous approval of the Central Government in this behalf, levy on, and collect from, the embarking passengers at an airport other than the major airports referred to in clause (h) of Section 2 of

the Airports Economic Regulatory Authority of India Act, 2008, the development fees at the rate as may be prescribed;

(ii) levy on, and collect from, the embarking passengers at major airport referred to in clause (h) of Section 2 of the Airports Economic Regulatory Authority of India Act, 2008, the development fees at the rate as may be determined under clause (b) of sub-section (1) of Section 13 of the Airports Economic Regulatory Authority of India Act, 2008,

and such fees shall be credited to the Authority and shall be regulated and utilised in the prescribed manner, for the purposes of:

(a) funding or financing the costs of upgradation, expansion or development of the airport at which the fee is collected; or

(b) establishment or development of a new airport in lieu of the airport referred to in clause (a); or

(c) investment in the equity in respect of shares to be subscribed by the Authority in companies engaged in establishing, owning, developing, operating or maintaining a private airport in lieu of the airport referred to in clause (a) or advancement of loans to such companies or other persons engaged in such activities.

4.167 Part XI, Rules, 86, 88 and 89 of the Aircraft Rules, 1937 prescribe:

<u>Tariff charges.</u> – (1) At every aerodrome referred to in rule 85, there shall be exhibited in a conspicuous place a single tariff of charges, including charges for landing and length of stay, and such tariff shall be applicable alike to all aircraft whether registered in India or in any other contracting State.

(2) In the case of aerodromes belonging to the Authority, the charges mentioned in sub-rule (1) shall be levied by the Authority in accordance with section 22 of the Airports Authority of India Act, 1994. (55 of 1994).

(3) In the case of licensed public aerodromes, other than the aerodromes belonging to the Authority, the charges mentioned in sub-rule (1) shall be determined by the licensee in accordance with the principle of cost recovery as specified by the International Civil Aviation Organisation and such charges shall be notified with the approval of the Central Government or any authority constituted in this behalf by such Government.

(4) Not withstanding anything contained in sub-rules (2) and (3), in the case of a major airport, the tariff of charges referred to in sub-rule (1) shall be such as may be determined under clause (a) of sub-section (1) of section 13 of the Airports Economic Regulatory Authority of India Act, 2008.

Explanation. – For the purpose of this rule, "Authority" means the Airports Authority of India constituted under section 3 of the Airports Authority of India Act, 1994. (55 of 1994)

Passenger Service Fee — The licensee is entitled to collect fees to be called as Passenger Service Fee from the embarking passengers at such rate as the Central Government may specify and is also liable to pay for security component to any security agency designated by the Central Government for providing the security service.

Provided that in respect of a major airport such rate shall be as determined under clause (c) of sub-section (1) of section 13 of the Airports Economic Regulatory Authority of India Act, 2008.

User Development Fee — The licensee may

(i) Levy and collect at a major airport the User Development Fees at such rate as may be determined under clause (b) of sub-section (1) of section 13 of the Airports Economic Regulatory Authority of India Act, 2008;

(ii) levy and collect at any other airport the User Development Fees at such rate as the Central Government may specify.

4.168 The tariff determination for aeronautical services at major airports has until recently been undertaken by MoCA, with the Operation, Management and Development Agreements (OMDAs) and Concession Agreements (CAs) between the JVCs and AAI/MoCA for Delhi, Mumbai, Bangalore and Hyderabad airports prescribing tariff principles and methodology to be followed for determination of airport charges at respective airports.

4.169 The concession agreements for Bangalore and Hyderabad provide for levy of a User Development Fee (UDF) as an airport charge. However, no methodology has been prescribed in the Aircraft Rules, 1937 or these concession agreements for determining the UDF.

4.170 Delhi (DIAL) and Mumbai (MIAL) are also, presently, levying Development Fee (DF) on the departing passengers, under section 22A of the Act, the rate and duration for which was prescribed by MoCA.

4.171 These levies (UDF / DF) at the four airports – DIAL, MIAL, BIAL and HIAL, were approved, on an ad hoc basis.

4.172 The following table identifies the basis for determination of airport tariffs at each of the major airports:

Exhibit 5: Airport Tariffs at Major Airports

Airport Charges	Air traffic management Services	Services offered in connection with aircraft operations	Passenger Service Fee (PSF)	Development Fee (DF)/ Airport Development Fee (ADF)	User Development Fee (UDF)
Delhi	As per Airport Charges of AAI[39]	As per *base airport charges*[40] as prescribed in DIAL SSA, Schedule 8 plus 10%		**Domestic:** Rs. 200/departing domestic passenger **International:** Rs. 1,300/ departing international passenger	NA
Mumbai		As per *base airport charges*[41] as prescribed in MIAL SSA, Schedule 8 plus 10%		**Domestic:** Rs. 100/departing domestic passenger **International:** Rs. 600/ departing international passenger	NA
Kolkata		As per Airport Charges of AAI	As per Airport Charges of AAI	NA	NA
Chennai		As per Airport Charges of AAI	As per Airport Charges of AAI	NA	NA
Cochin		As per Airport Charges of CIAL	As per Airport Charges of CIAL	NA	NA
Bangalore		As per *regulated charges* [42]as defined in BIAL Concession agreement, Schedule 6 Prevailing tariffs at AAI airports on airport opening date plus 10%		NA	**Domestic:** Rs. 260/departing domestic passenger **International :** Rs. 1070/ departing international passenger

[39] As per Airports Authority of India, Airport Charges w.e.f. 1st March 2009

[40] *Base Airport Charges* includes Landing, Parking and Housing Charges, X-ray Baggage Charges and Passenger Service fees

[41] *Base Airport Charges* includes Landing, Parking and Housing Charges, X-ray Baggage Charges and Passenger Service fees

[42] *Regulated Charges* includes Landing, Parking and Housing Charges, Passenger Service Fee and User Development Fee

Airport Charges	Air traffic management Services	Services offered in connection with aircraft operations	Passenger Service Fee (PSF)	Development Fee (DF)/ Airport Development Fee (ADF)	User Development Fee (UDF)
Hyderabad		As per *regulated charges*[43] as prescribed in HIAL Concession agreement, Schedule 6 Prevailing tariffs at AAI airports on airport opening date plus 10%		NA	**Domestic:** Rs. 375/departing domestic passenger **International :** Rs. 1000/ departing international passenger
Ahmedabad		As per Airport Charges of AAI	As per Airport Charges of AAI	NA	NA
Goa		As per Airport Charges of AAI	As per Airport Charges of AAI	NA	NA
Trivandrum		As per Airport Charges of AAI	As per Airport Charges of AAI	NA	NA
Pune		As per Airport Charges of AAI	As per Airport Charges of AAI	NA	NA
Calicut		As per Airport Charges of AAI	As per Airport Charges of AAI	NA	NA

4.173 In terms of the key airport charges, the Passenger Service Fee (PSF), the User Development Fee (UDF), Development Fee (DF) and Landing, Parking and Housing Charge that are levied by airports, their mode of charging and broad coverage are presented below:

Exhibit 6: Airport Charges – Coverage and Charging Mode

Levy	Charging mode
PSF – Passenger Service Fee	Direct to Passengers
UDF – User Development Fee	Direct to Passengers
DF – Development Fee	Direct to Passengers
LPH – Landing, Parking & Housing Charge	To Airlines

4.174 As can be seen from the above table, while PSF, UDF and DF are directly levied to the passengers, LPH charges are levied to airlines. It is important to note that an increase in passenger specific charge(s) would result in the reduction for the airline specific charges and vice-versa for given fair rate of return and forecast of business volumes (passengers, cargo, etc.).

[43] *Regulated Charges* includes Landing, Parking and Housing Charges, Passenger Service Fee and User Development Fee

4.175 Further, while the broad coverage of PSF and UDF is similar in terms of covering operating costs, the DF is a pre-funding levy. In future, the scope and coverage of these levies / charges would need to be considered in terms of their interplay within the overall revenue requirement.

Pre-Funding

4.176 Some pre-funding of airport / air navigation service investments by users during the course of their construction, before the assets are commissioned and before they start providing valuable services could be considered.

4.177 Pre-funding can be effected in the determination of tariffs by way of adjustments to allowable depreciation or by way of development fees that can be determined vide Section 13 (1) (b) of the Act.

Indian and International Experiences

4.178 In the Indian context, a distinct pre-funding levy was approved for Mumbai and Delhi airports. The levy was specified differently between domestic and international passengers.

4.179 Certain airports around the world have also levied fees for pre-financing purposes. The most notable example is the United States where Passenger Facility Charges (PFCs) go towards future development projects. In Canada, Airport Improvement Fee (AIF) has been used at certain privatized airports which no longer have access to government funding. Few examples of other airports which levy pre-financing charges include Norwich International Airport, UK (ADF), Soekarno-Hatta International Airport, Indonesia (PSC) and Newquay Cornwall Airport, UK (ADF). In United Kingdom, the regulator takes into account requirements for pre-financing when considering appropriate level of charges.

4.180 ICAO's Airport Economics Manual (Doc 9562) and Policies on Charges for Airports and Air Navigation Services (Doc 9082/8) provide guidance on the possible use of pre-funding for the development of airports in specific circumstances and subject to detailed safeguards. The safeguards include effective and transparent economic regulation of user charges and the related provision of services including performance auditing and benchmarking; comprehensive and transparent accounting; substantive consultation; and application of charges for a limited period of time.

4.181 In the criteria for capital projects, the documents states that:

..airport management should be able to clearly demonstrate to aircraft operators and economic oversight authorities the advantages of pre-funding over traditional capital funding techniques. Pre-funding should be considered only for capital expansion projects that have reached a substantial level of maturity in the capital planning process, including

project justification, project scope, proposed implementation schedule (including project start and completion dates), cost estimates, and required project approval levels. In the case of developing countries, consideration could also be given to funding large-scale capital refurbishment projects. Pre-funding should not be used for establishment of a capital sinking fund for undefined projects as current ICAO cost recovery policies allow for limited capital reserves, nor should pre-funding pay for operating costs.

…may be used to pay capital project related development and implementation costs including preparation of final engineering and architectural project plans, contracting and administration costs (including reasonable costs related to the collection of the pre-funding charges), construction, equipment purchases, environmental costs, and construction site security costs..

4.182 The documents also states that[44]:

…notwithstanding the principles of cost-relatedness for charges and of the protection of users from being charged for facilities that do not exist or are not provided (currently or in the future) that, after having allowed for possible contributions from non-aeronautical revenues, pre-funding of projects may be accepted in specific circumstances where this is the most appropriate means of financing long-term, large-scale investment, provided that strict safeguards are in place, including the following:

i. *Effective and transparent economic oversight of user charges and the related provision of services, including performance auditing and "benchmarking" (comparison of productivity criteria against other similar enterprises);*

ii. *Comprehensive and transparent accounting, with assurances that all aviation user charges are, and will remain, earmarked for civil aviation services or projects;*

iii. *Advance, transparent and substantive consultation by ANSPs and, to the greatest extent possible, agreement with users regarding significant projects; and*

iv. *Application for a limited period of time with users benefiting from lower charges and from smoother transition in changes to charges than would otherwise have been the case once new facilities or infrastructure are in place.*

[44] ICAO Doc 9082/8, paragraph 48

4.183 In formulating an approach in this regard, the key points are:

- Pre-Funding is the "last resort" and hence it will have to be ensured that without it the planned and required investments would not occur. This will involve consideration of the financing issues faced by the company and the extent to which pre-funding will be necessary to secure finance or will reduce the company's actual cost of financing or will facilitate a smooth progression of tariffs or reduce tariffs in due course to lower levels than they would otherwise have been;

- Pre-Funding will not be taken into consideration while determining the RAB for the purpose of calculating fair rate of return to the investor. This will lower the airport tariffs compared to what they would have been in the absence of Pre-Funding (apart from the possibility that the airport investment would not have taken place);

- The mechanisms for securing that the interest costs or overall costs of financing assets that are not pre-funded are included in the RAB.

Individual Tariffs Vs Aggregate

4.184 Tariffs need to be determined for aeronautical services and other fees such as development fees for the duration of a tariff cycle.

4.185 Due to the need to accommodate the uncertain effects of inflation, it is unlikely to be appropriate to specify tariffs in rupee amounts for a period of up to five years. Hence it will be necessary to specify a formula which can be used to determine tariffs applicable to each year. Such a formula could have reference to inflation.

4.186 In this context, it would be possible to specify a formula that applies to each individual tariff. The advantage of doing this is relative simplicity and it is the approach provided for in the State Support Agreements for Delhi and Mumbai. Its disadvantage is that it creates rigidity in the tariff structure that cannot respond to changing needs or new information, for example about the relative costs of services.

4.187 It is more common for regulators to specify an aggregated form of control. The two main choices are:

(a) A formula that specifies annual percentage changes in the maximum revenue yield (principally on a per passenger basis). This method is used in a wide range of countries.

(b) A formula that specifies annual percentage changes in a revenue-weighted basket of tariffs. This approach is used, for example, in South Africa.

4.188 A tariff basket approach does not readily permit the introduction of new tariffs and so may be most useful where tariff structures are relatively stable.

4.189 Other variations could also be possible. A particular example is the case of NATS (the air traffic service operator) in the UK for which the formula applies 50% to a revenue term and 50% to a revenue yield (on a per chargeable kilometre basis) term.

Establishing individual tariff/fees

4.190 In establishing individual tariff/ fees from an aggregate price control formula / target revenues, relevant factors that could be considered include:

- Acquisition of information and consulting with stakeholders to determine individual tariff/fees;
- Allowing the airport / air navigation service provider to take the lead in developing detailed tariff/fee proposals, subject always to the aggregate control, consulting with stakeholders and providing justification where necessary or where requested. Such an approach could provide for safeguards by way of consultation process to permit stakeholders to make representations and regulatory purview over the final structure of tariff/fees if so considered appropriate.

4.191 Establishing individual tariff/fees from target revenues may typically involve considering:

- Views of stakeholders;
- Continuity of the tariff/fee structure from year to year;
- Cost relatedness;
- Other economic considerations including ability to pay.

Periodic Review & Monitoring of Tariffs

4.192 In the event that Price Cap form of regulation is adopted to maintain the integrity of the price cap in a Price Cap regime, it is appropriate to adopt a form of 'error correction'. Typically this is incorporated as a separate term in the Price Cap (CPI – X) formula. This term ensures that any amounts under-recovered or unwittingly over-recovered under a price cap for one year are compensated in the price cap for a subsequent year.

4.193 In this regard, airports / air navigation service provider could be required to furnish periodic compliance statements setting out how the price control formula has been complied with and computation of any 'error term'.

I. Traffic Forecasts

4.194 Traffic forecasts constitute an important building block in deriving regulated tariffs, both in terms of informing the assessment of operating expenditure, non-aeronautical revenues and investment needs and in terms of converting a cost base into a price control. Such forecasts may need to cover different categories of passengers, cargo and aircraft movements.

4.195 In respect of approaches to be followed for traffic forecasting, the document published by the Secretariat for the Committee on Infrastructure, Planning Commission, Government of India titled "Norms and Standards for Capacity of Airport Terminals" (January 2009), adopted the recommendations contained in the Manual on Air Traffic Forecasting (Doc. 8991, Part I), which reads as follows:

"*Forecasting techniques that start with historical data and develop a forecast based on a set of rules fall into the category of quantitative methods. Situations in which such data are not readily available or applicable and in which experience and judgement have to be used are generally best suited for the application of quantitative forecasting methods. Numerous methods exist for analysing time-series data. The methods, which are possible in particular circumstances, may be limited by a lack of data or resources. In general, however, a more reliable forecast may be obtained by employing more than one approach and consolidating differing results through judgment and knowledge of the markets concerned.*"

4.196 Such traffic forecasts would need to be made correctly and assessed. Assessment of the forecasts could be informed inter alia by:

- The airport's own forecasts of traffic including their methodology adopted;
- The development and planned development of facilities at the airport;
- The development and planned development of facilities, commercial areas and major industries local to the airport that may impact on demand for airport services or access to the airport;
- Broader regional, national and global forecasts of macro economic factors, such as economic growth, and of aviation markets;
- Information revealed through consultation between the airport and airlines and other stakeholders regarding market opportunities and airline plans and expectations;
- Relevant forecasts published or otherwise made available by other authorities or informed commentators

J. Regulatory Asset Base

4.197 In many regulatory regimes internationally and across sectors, the Regulatory Asset Base (RAB) has become an integral part of price cap regulation and tariff determination. Broadly speaking, Regulatory Asset Base is the investments made adjusted in conformity with regulatory principles.

4.198 The RAB follows a well laid out method of calculation of such investments on which the regulator will permit a fair rate of return. Hence RAB provides a method for a regulator to keep account of the net investment in regulated businesses and thus provide a basis for incorporating a reasonable return on that net investment while determining tariff levels.

4.199 Internationally, the RAB in many sectors has also become a basis for investor confidence. Where a regulator demonstrates integrity in rolling forward RAB valuations from tariff cycle to tariff cycle that avoids arbitrary adjustments and fairly reflects investment activity, rating agencies and investors have greater confidence in the investment environment.

4.200 The method of accounting for (i.e. calculating) the RAB has some similarities with conventional accounting for a company's fixed assets, with opening values, new additions and deductions for depreciation. As discussed above, the RAB account does not necessarily correspond to fixed asset registers and financial accounts maintained by the company because of adjustments made to the investments (as appear in the fixed asset registers and financial accounts maintained by the company) in accordance with, well laid regulatory principles.

4.201 The first step in tariff determination would be establishing a value for the initial RAB. Principles of initial RAB valuation would inter alia include:

- Assets relevant to regulated activities. These may not necessarily include all assets held by the company but may include both Aeronautical and Non-Aeronautical assets. Issues to be addressed would include
    - Whether an asset is owned or controlled by the regulated company;
    - Whether an asset is airport related or not, which may be informed by its location, its commercial nature or its dependencies on airport activities and demand for airport services;
- Accounting book values of the relevant assets;
- Other valuations of the relevant assets, where appropriate.
- The reasonable expectations of investors in concessions at the time of committing to the concession.

4.202 For each tariff cycle, the RAB keeps account of:

- the RAB value established at the time of the last price review;
- new investment made by a company that can be fairly attributed to the regulated business; and
- the value of investment returned to the company, in the form of depreciation allowed for in tariff calculations.

RAB Maintenance Basis

4.203 The RAB may be maintained in nominal terms or in real, inflation adjusted terms using a suitable indexation method. Nominal or real rates of return would need to be applied to the RAB accordingly.

4.204 A real basis for the RAB is associated with less volatility in tariff levels through the investment cycle and provides investors with some protection against inflation risk. A nominal basis is sometimes preferred by investors as it tends to provide stronger cash flows at the time of financing new investment.

4.205 Either basis of maintenance should provide the same overall net present value of cash flows and airport / air navigation service charges.

Initial Valuations and RAB Accounting

4.206 To establish a basis for the RAB accounts at regulated airports / air navigation service provider, it will be necessary for AERA to establish initial valuations.

4.207 To determine initial valuations, AERA may need to consider for each airport / air navigation service provider:

- The assets relevant to regulated activities. These may not necessarily include all assets held by the company but may include both Aeronautical and Non-Aeronautical assets. Issues to be addressed would include:
  - Whether an asset is owned or controlled by the regulated company
  - Whether an asset is airport related or not, which may be informed by its location, its commercial nature or its dependencies on airport activities and demand for airport services
- Accounting book values of the relevant assets
- Other valuations of the relevant assets, where appropriate

- The reasonable expectations of investors in concessions at the time of committing to the concession.

4.208 The policy in relation to accounting for RAB needs to be decided in terms of which assets are included in the initial RAB, what investments are included as RAB additions, what events are treated as RAB disposals and what valuations should be ascribed to such additions and disposals.

4.209 In respect of initial assets and additions, a number of factors are, generally, considered including:

- Whether an asset is owned or controlled by the regulated company;
- Whether an asset is airport related or not, which may be informed by its location, its commercial nature or its dependencies on airport activities and demand for airport services;
- Whether decisions to acquire the asset were subject to appropriate user consultation on need and scope of requirement;
- The cost, book value or fair value of the asset;
- Whether and to what extent the asset was procured efficiently.

4.210 In respect of asset disposals, the following aspects may need to be considered:

- The book value of the asset disposed off
- The consideration received, if any, for the disposal
- The fair market or economic value of the asset disposed off

K. Depreciation

4.211 Generally, depreciation taken into consideration for determination of airport tariffs should be linked to deductions applied to the RAB.

4.212 In some cases, notably in the case of the UK's CAA, depreciation is explicitly used to account for regulatory decisions to accelerate or defer regulated revenues between periods, for example to permit a smoother progression of tariffs over time.

4.213 In the Indian context, the concept of "advance against depreciation" was employed in the Electricity Sector in the initial tariff periods to provide for loan repayment wherever the schedules required additional cash flows over and above the depreciation allowable.

4.214 In determining allowances for depreciation for inclusion in price cap calculations, the following factors could be considered:

- The company's stated basis for calculating depreciation in its financial accounts;
- Whether, for simplicity or other reasons, alternative regulatory bases are appropriate, for example;
    - Using estimated overall average asset lives rather than applying detailed asset lives for individual assets;
    - The anticipated useful economic life of an asset as is expected to be used in the airport / air navigation service provision;
    - The pattern of its usage over that time.
- Adjustments for any differences between accounting and regulatory valuations (for example if the RAB is to be maintained in real terms);
- Any other relevant price profiling considerations.

L. Revenue Share

4.215 There are, presently, four privately managed airports in the country with concession agreements with varied commercial terms with respect to revenue share among other things. The concession agreements with the JVCs in Delhi and Mumbai airport have a component of revenue share with AAI. The quantum of revenue share was the bidding criterion for selection of these JVCs.

4.216 For Delhi Airport, the consortium led by GMR shares 45.99% of projected revenue as revenue share (referred to as Annual Fee) to AAI. The projected revenue for each year is required to be set forth in the Business Plan. The project revenue is shared in twelve equal monthly installments, where each installment is to be paid on the first day of each calendar month. In case of actual revenue being higher than projected revenue, the additional revenue is settled at the end each quarter. Regarding the treatment of Annual Fee, the clause 3.1.1 of State Support Agreement states that:

"...the Upfront Fee and the Annual Fee paid / payable by the JVC to AAI under the OMDA shall not be included as part of costs for provision of Aeronautical Services and no pass-through would be available in relation to the same."

4.217 For Mumbai Airport, the consortium led by GVK shares 38.7% of projected revenue as revenue share (referred to as Annual Fee) to AAI. The projected

revenue for each year is required to be set forth in the Business Plan. The projected revenue is shared in twelve equal monthly installments, where each installment is to be paid on the first day of each calendar month. In case of actual revenue being higher than projected revenue, the additional revenue is settled at the end each quarter. Regarding the treatment of Annual Fee, the clause 3.1.1 of State Support Agreement states that:

"...the Upfront Fee and the Annual Fee paid / payable by the JVC to AAI under the OMDA shall not be included as part of costs for provision of Aeronautical Services and no pass-through would be available in relation to the same."

4.218 In addition to DIAL and MIAL concession agreement, the Greenfield airports in Bangalore and Hyderabad are required to pay concession fee amounting to 4% of gross revenue to Government of India (Clause 3.3.1). The concession agreements require payment of no concession fee for the 10 financial years, but the concession fee so accrued is required to be paid in 20 equal half-yearly installments from the 11th year onwards including the concession fee for years 11th onwards (Clause 3.3.5). Further clause 3.3.6, under the Article on Interest and Taxes provides that:

(i) Payments made under Article 3.3 shall be treated as part of the operating expenses of the Airport with the exception of deferred payment under Article 3.3.5, which are in lieu of payments to be accounted for in the relevant year.

4.219 Treatment of this aspect would need to be considered based on contractual provisions and attendant issues with respect to the overall framework for tariff determination.

5. NEXT STEPS IN DEVELOPING REGULATORY PHILOSOPHY

5.1 To summarise, following issues are critical to establishing a successful economic regulatory regime for airports and air navigation services in the country:

(a) Form of regulation – whether Price Cap, Rate of Return or Light Touch;

(b) Till – Treatment of non-aeronautical revenues and adoption of Single, Dual or Hybrid (Shared) till;

(c) Fair Rate of Return (on investment and on equity);

(d) Capital Investment – Specifically the need for user consultation and degree of regulatory oversight to ensure efficient investment;

(e) Operating Expenditure – Incentives for efficiency improvement and cost pass through;

(f) Form of Price Control and Tariff Structure – Should the regulator set individual tariffs or the operator should have flexibility within the 'aggregate' determined by the regulator;

(g) Passenger Charges Vs Airline Charges – Interplay between the two to enable agreed upon fair rate of return to the investor / operator;

(h) Service Quality Monitoring – Setting and monitoring of standards, and ensuring compliance through pre-defined 'bonuses'/ 'rebates' on airport charges.

5.2 AERA would welcome comments on all the issues raised in this paper, especially the critical ones highlighted above. AERA would request that views draw on any available evidence relating to data / information, regulatory practices domestically and internationally.

5.3 Comments / submissions should be furnished, **latest by 5th January 2010,** to the following:

Shri Sandeep Prakash
Secretary
Airports Economic Regulatory Authority of India
Room no. 58, B Block, Rajiv Ghandi Bhawan
New Delhi 110003
Email: sandeep.prakash@aera.gov.in, sandeep.moca@nic.in
Fax 011 – 2465 6214

Appendix 1: Objectives of certain International Aviation Regulators

UK Civil Aviation Authority (CAA)

The CAA's role as an economic regulator established with the Airports Act 1986, which requires the CAA:

(a) To set maximum limits on airport charges

  (i) at designated airports (initially Heathrow, Gatwick, Stansted and Manchester airports);

  (ii) every 5 (or 6) years;

  (iii) with automatic reference to the Competition Commission

(b) To deal with complaints of anti-competitive behaviour;

(c) To oversee the provision of accounting information.

The act also requires that the CAA to discharge its functions in manner best calculated:

(a) To further the reasonable interests of users of UK airports;

(b) To promote the economic, efficient and profitable operation of UK airports;

(c) To encourage investment in time to satisfy anticipated demand;

(d) To impose the minimum restrictions necessary;

(e) While having regard to specified international obligations.

It is important to note that the objectives for the UK, CAA, are currently being reviewed in light of recent changes in the UK airports sector, as a result of the Competition Commission's ruling that BAA should dispose of Gatwick, Stansted and one of Glasgow or Edinburgh airport. To advise on the future of economic regulation of airports an expert panel has been convened. The panel recommended that the CAA's duties be reconsidered in light of regulatory good practice in other sectors and for the CAA to consider a duty of the general kind:

(a) To promote the interests of existing and future consumers of passenger and freight services at UK airports, wherever appropriate by promoting effective competition,

This primary duty would be supplemented by further duties as follows:

(a) to secure, so far as it is economical to meet them, that all reasonable demands for airport services are met;

(b) to ensure that licence holders are able to finance the activities which are subject of relevant licence obligations;

(c) to exercise its functions in respect of i) and ii) above in a manner which will make the best and most practicable contribution to the attainment of the NPS in respect of major airport developments, and to notify the Secretary of State in the event that the achievement of the NPS is impracticable;

(d) to promote economy and efficiency;

(e) to have regard to the effect on the environment and on local communities of activities connected with the provision of airport services;

(f) to take account of guidance issued by the Secretary of State on environmental matters;

(g) to follow the principles of better regulation, including consultation with all relevant stakeholders.

Presently, these are recommendations of an independent panel and are not current UK regulatory policy.

Commission for Aviation Regulation, Ireland

The Irish Commission for Aviation Regulation has the following regulatory objectives in respect of airport charges:

(a) to facilitate the efficient and economic development and operation of Dublin Airport which meet the requirements of current and prospective users of Dublin Airport;

(b) to protect the reasonable interests of current and prospective users of Dublin Airport in relation to Dublin Airport;

(c) to enable Dublin Airport Authority to operate and develop Dublin Airport in a sustainable and financially viable manner.

Airports Company South Africa – Regulating Committee

The Airport Company South Africa (ACSA) is regulated through a regulating committee with the following principal objectives:

(a) to restrain ACSA from abusing its monopoly position, without placing undue restrictions on its commercial activities

(b) to promote the reasonable interests and needs of the users of ACSA airports

(c) to promote the safe, efficient, economical and profitable operation of ACSA airports

(d) to encourage timely improvement of facilities at ACSA airports so as to satisfy anticipated demand

(e) to ensure ACSA is able to finance its obligations and has a reasonable prospect of earning a commercial return

Australian Competition and Consumer Commission

The Commission considers that it should seek to promote the following objectives in applying the legal framework for regulating airport charges:

(a) the cost base underlying the proposed charges is efficient;

(b) the airport operator faces appropriate signals for new investment decisions;

(c) airport users receive appropriate signals for the efficient use of airport services; and

(d) airport operator earns a rate of return which does not reflect monopoly rents.

Appendix 2: Till Treatment for Certain Regulated Airports

Country	Airports	Till
Australia	Adelaide, Brisbane, Melbourne, Perth, Sydney	Price Monitoring with a Dual Till reference point
Austria	Vienna	Single Till[1]
Belgium	Brussels	Single Till (moving towards dual over time)[1]
Denmark	Copenhagen	Hybrid Till[1]
France	Charles De Gaulle, Orly	Single Till
Germany[45]	Hamburg	Dual Till
Greece	Athens	Dual Till
Hungary	Budapest, Ferihegy	Hybrid Till[1]
Ireland	Dublin	Single Till
Jamaica	Kingston, Montego Bay	Single Till
Mexico	36 regional airports	Dual Till
Netherlands	Schiphol	Dual Till
New Zealand	Auckland, Wellington, Christchurch	Price Monitoring
Norway	Oslo	Single Till[1]
Portugal	Porto, Lisbon, Faro, Ponta Delgada	Single Till[1]
South Africa	All Airports Company South Africa (ACSA) airports	Single Till
Spain	Madrid/Barajas, Barcelona, Pal. de Mallorca, Malaga, Gran Canaria, Bilbao	Single Till[1]
Sweden	Stockholm (ARN), Malmö	Single Till[1]
UK	Heathrow, Gatwick, Stansted	Single Till

The table is not intended to be exhaustive. Sources various, including annual reports, ICAO and:

1 David Gillen (Working Paper 2007-5), 'The Regulation of Airports';

2 Tae Hoon Oum, Anming Zhang, and Yimin Zhang, (2004), 'Alternative Forms of Economic Regulation and their Efficiency Implications for Airports'

3 Tae H. Oum (2008), 'Impacts of Airports on Airline Competition: Focus on Airport Performance and Airport- Airline Vertical Relations'

[45] ICAO Case Study on Germany, http://www.icao.int/icao/en/atb/epm/CaseStudies_Regulation_ANSPs.htm

Appendix 3: Service Quality Requirements and Performance Standards at Indian Airports

Objective Service Quality Requirements as per OMDA with DIAL

Performance Area	Performance Measure	Target	Target to be achieved within number of years from the Effective Date of the OMDA
Transfer Process	Minimum connect times	Domestic/International: 60 minutes International/ International: 45 minutes	3 years
Terminal Services			
	Handling of complaints	100% of complaints responded to within 2 working days	1 year
	Response to phone calls	5% of calls answered within 20 seconds	1 year
	Availability of Flight Information	98% available	1.5 years
	Automated services	98% available	1.5 years
	Lifts, escalators etc.	98% available	2 years
	Repair completion time	95% of high priority complaints within 4 hours, 95% of others within 24 hours	1 year
	Baggage trolleys	100% availability	1 year
	Cleanliness	Achieve a satisfactory cleanliness rating for 95% of all inspections	1 year
	Availability of wheel chairs	100% of time within 5 minutes	0.5 year
	Assistance for the disabled	100% of time within 5 minutes	1 year
Check in	Maximum queuing time	5 minutes for business class 20 minutes for economy	2 years
Security check	Waiting time in queue	95% of passengers wait less than 10 minutes	2 years
CIQ	Checking time in queue	95% of passengers wait less than 20 minutes 95% of passengers wait less than 10 minutes	2 years 5 years
Baggage delivery	Time for bag delivery from aircraft arrival	Domestic- First bag 10 minutes, last bag 30 minutes from on blocks time International-First bag 15 minutes, last bag 40 minutes from on blocks time.	5 years 3 years

Passenger arrival process (International)	Time taken from aircraft arrival to kerbside	95% of passengers take less than 45 minutes	5 years
Passenger boarding bridges	% passengers served by boarding bridges	International - 90 % of annual passengers Domestic - 90 % of annual passengers travelling on A/C B737/A320 or larger unless not required by Airlines.	5 years
Runway system	Delays to arriving/departing aircraft	Average annual delay per aircraft: 4 minutes or better based on provision of International Standard ATC procedures and equipment as per CNS/ATM agreement.	5 years
Car parking	Average time taken to find parking space	95% of drivers take less than 5 minutes	5 years
	Average time to depart airport from parking space	95% of drivers take less than 5 minutes	5 years
Taxis	Maximum waiting time	95% of passengers wait less than 5 minutes 95% of passengers wait less than 3 minutes	1 year 5 years
Gate Lounges	Seating availability	Seats for 80% of gate lounge population	5 years
Cargo Services	Average dwell time	For imports, maximum processing time of 24 hours For exports, maximum processing time of 24 hours	2 years 2 years

Source: OMDA, DIAL

Subjective Service Quality Requirements as per OMDA with DIAL

The items set out below are assessed as being under the reasonable control or influence of the JVC and will be used to compute the rating achieved as set out in Section 9.1.3 of OMDA.

1. Navigational Items - Ease of finding way through the airport / Sign posting - Flight Information Screens - Walking distances **2. Connectivity Items** - Ease of making connections with other flights - Ground transportation to / from airports. **3. Service Facilities** - Availability of baggage carts - Restaurant / eating facilities - Shopping facilities - Business facilities - Washrooms - Parking facilities **4. Value for money** - Restaurant / eating facilities - Shopping facilities - Parking facilities	**5. Service Delivery** - Courtesy, helpfulness of airport staff - Comfortable waiting / gate areas - Speed of baggage delivery service **6. Environmental factors** - Cleanliness of terminal - Ambience of the airport **7. Airline factors** - Waiting time at check-in - Efficiency of check-in - Courtesy, helpfulness of check-in staff - Business / Executive lounges The rating of the Airport as per IATA/ ACI AETRA Passenger survey for the purposes of the Subjective Service Quality Requirements shall be a number between one (1) to five (5) arrived at on the basis of the abovementioned 7 (seven) parameters.

Source: OMDA, DIAL

Objective Service Quality Requirements as per OMDA with MIAL

Performance Area	Performance Measure	Target	Target to be achieved within number of years from the Effective Date of the OMDA
Transfer Process	Minimum connect times	Domestic/International: 60 minutes International/ International: 45 minutes	3 years
Terminal Services			
	Handling of complaints	100% of complaints responded to within 2 working days	1 year
	Response to phone calls	5% of calls answered within 20 seconds	1 year
	Availability of Flight Information	98% available	1.5 years
	Automated services	98% available	1.5 years
	Lifts, escalators etc.	98% available	2 years
	Repair completion time	95% of high priority complaints within 4 hours, 95% of others within 24 hours	1 year
	Baggage trolleys	100% availability	1 year
	Cleanliness	Achieve a satisfactory cleanliness rating for 95% of all inspections	1 year
	Availability of wheel chairs	100% of time within 5 minutes	0.5 year
	Assistance for the disabled	100% of time within 5 minutes	1 year
Check in	Maximum queuing time	5 minutes for business class 20 minutes for economy	2 years
Security check	Waiting time in queue	95% of passengers wait less than 10 minutes	2 years
CIQ	Checking time in queue	95% of passengers wait less than 20 minutes 95% of passengers wait less than 10 minutes	2 years 5 years
Baggage delivery	Time for bag delivery from aircraft arrival	Domestic- First bag 10 minutes, last bag 30 minutes from on blocks time International-First bag 15 minutes, last bag 40 minutes from on blocks time.	5 years 3 years

Passenger arrival process (International)	Time taken from aircraft arrival to kerbside	95% of passengers take less than 45 minutes	5 years
Passenger boarding bridges	% passengers served by boarding bridges	International - 90 % of annual passengers Domestic - 90 % of annual passengers travelling on A/C B737/A320 or larger unless not required by Airlines.	5 years
Runway system	Delays to arriving/departing aircraft	Average annual delay per aircraft: 4 minutes or better based on provision of International Standard ATC procedures and equipment as per CNS/ATM agreement.	5 years
Car parking	Average time taken to find parking space	95% of drivers take less than 5 minutes	5 years
	Average time to depart airport from parking space	95% of drivers take less than 5 minutes	5 years
Taxis	Maximum waiting time	95% of passengers wait less than 5 minutes 95% of passengers wait less than 3 minutes	1 year 5 years
Gate Lounges	Seating availability	Seats for 80% of gate lounge population	5 years
Cargo Services	Average dwell time	For imports, maximum processing time of 24 hours For exports, maximum processing time of 24 hours	2 years 2 years

Source: OMDA, MIAL

Subjective Service Quality Requirements as per OMDA with MIAL

The items set out below are assessed as being under the reasonable control or influence of the JVC and will be used to compute the rating achieved as set out in Section 9.1.3 of OMDA:

1. Navigational Items - Ease of finding way through the airport / Sign posting - Flight Information Screens - Walking distances **2. Connectivity Items** - Ease of making connections with other flights - Ground transportation to / from airports. **3. Service Facilities** - Availability of baggage carts - Restaurant / eating facilities - Shopping facilities - Business facilities - Washrooms - Parking facilities **4. Value for money** - Restaurant / eating facilities - Shopping facilities - Parking facilities	**5. Service Delivery** - Courtesy, helpfulness of airport staff - Comfortable waiting / gate areas - Speed of baggage delivery service **6. Environmental factors** - Cleanliness of terminal - Ambience of the airport **7. Airline factors** - Waiting time at check-in - Efficiency of check-in - Courtesy, helpfulness of check-in staff - Business / Executive lounges The rating of the Airport as per IATA/ ACI AETRA Passenger survey for the purposes of the Subjective Service Quality Requirements shall be a number between one (1) to five (5) arrived at on the basis of the abovementioned 7 (seven) parameters.

Source: OMDA, MIAL

Performance Standards – Concession Agreement with BIAL

Monitoring of Performance Standard is done in accordance with the Article 9 of the Concession Agreement.

IATA Global Airport Monitor Standards

The following criteria shall be measured on an annual basis in accordance with Article 9. The surveys shall be scored in accordance with the IATA Global Airport Monitor scoring mechanism (i.e. on a scale of one to five, where one is very poor and five is excellent):

(i) Ease of finding your way;
(ii) Flight information screen;
(iii) Availability of connections to the same continent;
(iv) Availability of connections to another continent;
(v) Ease of making connections;
(vi) Availability of baggage carts;
(vii) Courtesy of airport staff;
(viii) Restaurant and eating facilities;
(ix) Shopping facilities
(x) Washrooms;
(xi) Passport inspection;
(xii) Customs inspection;
(xiii) Waiting areas/lounges;
(xiv) Baggage delivery service;
(xv) Ground transportation to/from city;
(xvi) Parking facilities;
(xvii) Sense of security; and
(xviii) Ambience of airport.

Source: Concession Agreement, BIAL

Performance Standards – Concession Agreement with HIAL

Monitoring of Performance Standard is done in accordance with the Article 9 of the Concession Agreement.

IATA Global Airport Monitor Standards

The following criteria shall be measured on an annual basis in accordance with Article 9. The surveys shall be scored in accordance with the IATA Global Airport Monitor scoring mechanism (i.e. on a scale of one to five, where one is very poor and five is excellent):

(i) Ease of finding your way;
(ii) Flight information screen;
(iii) Availability of connections to the same continent;
(iv) Availability of connections to another continent;
(v) Ease of making connections;
(vi) Availability of baggage carts;
(vii) Courtesy of airport staff;
(viii) Restaurant and eating facilities;
(ix) Shopping facilities
(x) Washrooms;
(xi) Passport inspection;
(xii) Customs inspection;
(xiii) Waiting areas/lounges;
(xiv) Baggage delivery service;
(xv) Ground transportation to/from city;
(xvi) Parking facilities;
(xvii) Sense of security; and
(xviii) Ambience of airport.

Source: Concession Agreement, HIAL

Appendix 4: Service Quality Requirements & Performance Standards – Int. Examples

Summary of CAA decisions for service quality standards and rebates during Q5

Element	Metric	Standard		Maximum airport charges at risk (% of total annual charge revenue)				Note: describes change since Q4 *(and change since Nov 2007)*
		Heathrow	Gatwick	Heathrow		Gatwick		
Departure lounge seat availability	Monthly 12 month lagged QSM score	3.8	3.8	0.36%		0.36%		Increase in standard by 0.2 from Q4 standard. *(As proposed)*
Cleanliness		3.9	4	0.36%		0.36%		
Way-finding		4	4.1	0.36%		0.36%		
Flight information		4.2	4.2	0.36%		0.36%		
Passenger sensitive equipment (general)	% time available	99%	99%	0.40%		0.40%		Increase in standard from 98% Q4 standard *(As proposed)*
Arrivals reclaim (baggage carousels)	% time available	99%	99%	0.40%		0.40%		
Central security queues	Test 1: Times queue <5 minutes	95%	95%	0.77%		0.77%		Increase in standard and the introduction of a second tier test *(As proposed)*
	Test 2: Additional test	99% ≤ 10 minutes	98% ≤ 15 minutes					
				Heathrow T1/HET, T3, T4	Heathrow T5	Gatwick ST	Gatwick NT	
Transfer search	Times queue <10 minutes	95%	From Apr 2009, to be decided during 2008/09	0.38%	0.34%	0.45%	0.40%	New element *(Detail added & new T5 weighting)*
Pier service	% of passengers pier served	As set out in Table 9-1		0.35%	0.30%	0.45%	0.40%	Standard linked to expected level of pier service in each terminal *(Proposal refined & new T5 weighting)*
Passenger sensitive equipment (priority)	% time available	99%	99%	0.35%	0.30%	0.45%	0.40%	New element *(As proposed except T5 weighing)*
Gatwick Inter Terminal & T5 Transit Systems	% time 1 car available	99%	99%		0.34%		0.31%	Double test applies to Gatwick NT & Heathrow T5 *(Heathrow T5 added)*
	% time 2 cars available peak time	97%	97%					
Stands	% time available	99%	99%	0.31%	0.27%	0.35%	0.31%	Increase in standard from 98% *(As proposed except T5 weighing)*
Jetties	% time available	99%	99%	0.31%	0.27%	0.35%	0.31%	Increase in standard from 97% *(As proposed except T5 weighing)*
Fixed electrical ground power	% time available	99%	99%	0.23%	0.20	0.25%	0.22%	Increase in standard from 98%

Element	Metric	Standard		Maximum airport charges at risk (% of total annual charge revenue)				Note: describes change since Q4 *(and change since Nov 2007)*
		Heathrow	Gatwick	Heathrow		Gatwick		
								(As proposed except T5 weighing)
Pre-conditioned air	availability	98%	n/a			Only applies to Heathrow		Reporting systems - but no money at risk *(As proposed)*
Stand entry guidance		99%	n/a	0.31%	0.27%	Only applies to Heathrow		New element *(As proposed except T5 weighing)*
Staff search	Times queue <10 minutes	95%	From Apr 2009, to be decided during 2008/09	0.38%	0.34%	0.35%	0.31%	New element *(Detail added & new T5 weighting)*
Control posts search	Times queue <20 minutes	95%		0.38%	0.38%	0.35%	0.31%	New element *(Detail added & new T5 weighting)*
Aerodrome Congestion Term				**1.00%**		**1.00%**		Unchanged *(As proposed)*

Source: Economic Regulation of Heathrow and Gatwick Airports 2008-2013, CAA Decision, March 2008

London Heathrow Bonus

Element	Lower performance limit (LPL)	Upper performance limit (UPL)	Maximum annual bonus (MAB) as percentage of annual airport charges
QSM score			
Departure lounge seat availability	3.8	4.5	0.36%
Cleanliness	3.9	4.5	0.36%
Way-finding	4.0	4.5	0.36%
Flight information	4.2	4.5	0.36%
Availability of time			
Passenger sensitive equipment (general)	99%	100%	0.40%
Arrivals reclaim (baggage carousels)	99%	100%	0.40%

Source: CAA
Notes:
The lower performance level (LPL) is set at the proposed Q5 performance standard below which service quality rebates are payable. The upper performance level (UPL) is set, for service aspects measured by the QSM, at the midpoint between a consistently 'good' and 'excellent' performance (between 4 and 5 on the QSM scoring system). For other service measures, the UPL is set at the maximum achievable level of 100 per cent availability.

Source: Economic Regulation of Heathrow and Gatwick Airports 2008-2013, CAA Decision, March 2008

Quality of Service regime at Dublin Airport

Service quality measure	Source	Target	% weight in price cap
Security passenger search time no longer than 30 minutes	DAA	100%	1.5
Percentage of time out-bound baggage handling system unavailable for more than 30 minutes during hours of operation	DAA	0%	0.75
Percentage of time in-bound baggage handling system available during hours of operation	DAA	99%	0.25
Ease of way-finding through airport	ACI	3.70	0.25
Flight information screens	ACI	3.80	0.25
Cleanliness of airport terminal	ACI	3.60	0.25
Cleanliness of washrooms	ACI	3.30	0.25
Comfort of waiting/gate area	ACI	3.00	0.25
Courtesy/helpfulness of airport staff (excluding check-in & security)	ACI	3.80	0.1
Courtesy/helpfulness of security staff	ACI	3.80	0.15
Overall satisfaction (all passengers)	ACI	3.50	0.25
Communication/telecom/e-facilities	ACI	3.10	0.25
Feeling of being safe and secure	ACI	3.80	0

Source: Determination on Maximum Levels of Airport Charges at Dublin Airport, Commission Paper 4/2009, Commission for Aviation Regulation

Australia Airport quality of service monitoring – Objective Measures

Service / facility	Objective measure	Terminal (airport operated):			Total[1]	Qualitative information regarding quality of service outcomes[2]	
		International	Domestic	Domestic express / other		Additional comments and information	How does XXX airport and/or other parties influence the service's/facility's standard of quality?
Aircraft parking facilities and bays	Number of aircraft parking bays on 30 June in the financial year						
Aerobridge usage	Number of aerobridges on 30 June in the financial year						
	Total number of passengers who used aerobridges for **embarkation** (arrival) in the financial year						
	Total number of passengers who **embarked** (arrived) in international aircraft in the financial year						
	Total number of passengers who **embarked** (arrived) in the financial year						
	Number arriving international aircraft that used aerobridges in the financial year						
	Total number of passengers who used aerobridges for **disembarkation** (departure) in the financial year						
	Total number of passengers who **disembarked** (departed) in international aircraft in the financial year						

Service / facility	Objective measure	Terminal (airport operated):			Total[1]	Qualitative information regarding quality of service outcomes[2]	
		International	Domestic	Domestic express / other		Additional comments and information	How does XXX airport and/or other parties influence the service's/facility's standard of quality?
Check-in services and facilities	Number of check-in desks on 30 June in the financial year						
	Number of hours during the financial year when more than 80 per cent of check-in desks were in use						
	Total number of hours during the financial year when any check-in desk was open						
Facilities to enable the processing of passengers through customs, immigration and quarantine	Number of **inbound** Immigration desks on 30 June in the financial year						
	Number of baggage inspection desks on 30 June in the financial year						
	Number of **outbound** Immigration desks on 30 June in the financial year						
Security inspection	Number of security clearance systems, including equipment required to process passengers and baggage, on 30 June in the financial year						
Gate lounges and seating other than	Number of gate lounges on 30 June in the financial year						

Service / facility	Objective measure	Terminal (airport operated):			Total[1]	Qualitative information regarding quality of service outcomes[2]	
		International	Domestic	Domestic express / other		Additional comments and information	How does XXX airport and/or other parties influence the service's/facility's standard of quality?
in gate lounges	Number of seats in gate lounges on 30 June in the financial year						
	Total gate lounge area (in square metres) on 30 June in the financial year						
Inbound baggage systems, including reclaiming services and facilities	Capacity of baggage handling system (in bags per hour) on 30 June in the financial year						
	Total number of bags handled by baggage handling system in the financial year						
	Total number of hours during the financial year for which baggage handling system was in use						
	Total number of planned interruptions to inbound baggage system in the financial year						
	Total number of hours of planned interruptions to inbound baggage system in the financial year						
	Number of unplanned interruptions to inbound baggage system in the financial year						

Service / facility	Objective measure	Terminal (airport operated):			Total[1]	Qualitative information regarding quality of service outcomes[2]	
		International	Domestic	Domestic express / other		Additional comments and information	How does XXX airport and/or other parties influence the service's/facility's standard of quality?
	Total number of hours of unplanned interruptions to inbound baggage system in the financial year						
Outbound baggage system	Capacity of baggage handling equipment (in bags per hour) on 30 June in the financial year						
	Total number of bags handled by baggage handling equipment in the financial year						
	Total number of hours during the financial year for which baggage handling equipment was in use						
	Number of planned interruptions to baggage handling equipment in the financial year						
	Total number of hours of planned interruption to baggage handling equipment in the financial year						
	Number of unplanned interruptions to baggage handling equipment in the financial year						
	Total number of hours of unplanned interruption to baggage handling equipment in the financial year						

Service / facility	Objective measure	Terminal (airport operated):			Total[1]	Qualitative information regarding quality of service outcomes[2]	
		International	Domestic	Domestic express / other		Additional comments and information	How does XXX airport and/or other parties influence the service's/facility's standard of quality?
Baggage trolleys	Number of working accessible baggage trolleys on 30 June in the financial year						
Flight information, general signage and public-address systems	Number of flight information display screens on 30 June in the financial year						
	Number of information points on 30 June in the financial year						
Car Parking services and facilities[1]	Number of days short-term car park is open in the financial year						
	Number of short-term car parking spaces available to the public (including disabled parking) on 30 June in the financial year						
	Total annual throughput of short-term car park in the financial year						
	Number of days long-term car park is open in the financial year						
	Number of long-term car parking spaces available to the public (including disabled parking) on 30 June in the financial year						
	Total annual throughput of long-term car park in the financial year						

Service / facility	Objective measure	Terminal (airport operated):			Total[1]	Qualitative information regarding quality of service outcomes[2]	
		International	Domestic	Domestic express / other		Additional comments and information	How does XXX airport and/or other parties influence the service's/facility's standard of quality?
	Number of car parking spaces for staff of airport clients on 30 June in the financial year						
Peak hour[3]	Time of peak hour for **arriving** passengers						
	Time of peak hour for **departing** passengers						
Peak hour[3] traffic	Average number of **arriving** passengers during peak hour in the financial year						
	Average number of **departing** passengers during peak hour in the financial year						

Source: Airport quality of service monitoring templates, Airport Details 2008-09, ACCC, Australia

Australia Airport quality of service monitoring – Subjective Measures

Service/ Facility	Measure	Areas Covered for International Passengers	Areas Covered for Domestic Passengers	Areas Covered for Other Passengers
Check-in services and facilities	Check-in waiting time			
	Average check-in waiting time per passenger during peak hour[2] (enter average number of minutes):			
Facilities to enable the processing of passengers through customs, immigration and quarantine	Waiting time in inbound Immigration area			
	Waiting time in inbound baggage inspection area			
	Waiting time in outbound Immigration area			
Security inspection	Quality of security search process			
Gate lounges and seating other than in gate lounges	Quality and availability of seating in lounge area			
	Crowding in lounge area			
Baggage make-up, handling and reclaiming services and facilities	Waiting time for inbound baggage reclaim			
	Information display for inbound baggage reclaim			
	Circulation space for inbound baggage reclaim			
Baggage trolleys	Findability of baggage trolleys			
Flight information, general signage and public-address system	Flight information display screens			
	Signage and wayfinding			

Public areas in terminals and public amenities	Standard of washrooms			
Airport car parking	Standard of car parking facilities			
	Availability of car parking spaces			
	Time taken to enter car park			
Airport access	Congestion at kerbside taxi pick-up and drop-off			
	Facilities for kerbside taxi pick-up and drop-off			
	Standard of facilities for taxis			
	Waiting time for taxis			

Source: Airport quality of service monitoring templates, Airport Details 2008-09, ACCC, Australia

Appendix 2: Submissions in response to the White Paper

S.No	Agency
	Airport Operators & Associations
1	Airports Authority of India
2	Delhi International Airport Limited
3	GMR Hyderabad International Airport
4	Mumbai International Airport Limited
5	Cochin International Airport
6	Unique (Flughafen Zürich AG)
7	Fraport AG
8	Association of Private airport Operators
9	Airports Council International
	Airlines & Associations
10	Air India Charters
11	Federation of Indian Airlines
12	International Air Transport Association
	Cargo, Fuel Supply & Ground Handling Companies
13	Blue Dart Aviation Limited
14	Celebi-Cargo Operators
15	Cargo Service Centre
16	IndianOil Skytanking
	Apex Chambers of Commerce & Industry
17	Federation of Indian Chambers of Commerce and Industry
18	Confederation of Indian Industry
19	Associated Chambers of Commerce and Industry of India
	Other Institutions
20	Foundation for Aviation & Sustainable Tourism
21	Delhi Select Services Hospitality (P) Ltd
22	NALSAR University of Law, Hyderabad
23	Kenan Institute of Private Enterprise, University of North Carolina
24	Routes Development Group (UK), Hyderabad, India
25	Indian Institute of Management, Ahmedabad
26	Travel Food Services
27	Delhi Duty Free Shop Pvt Ltd
28	Devyani Food Street Pvt Ltd
	Additional Comment
	Planning Commission, Government of India

Appendix 3: Taxation and the cost of capital

1 In addition to covering the operating expense and a return on capital, regulators will also need to allow companies with sufficient revenue to meet their corporation tax liabilities. The three key approaches to taxation in the assessment of cost of capital are given below:

$$Cost\ of\ capital\ (Post-tax) = g \text{ x } \left(R_d \text{ x } (1-t)\right) + R_e \text{ x } (1-g)$$

$$Cost\ of\ capital\ (Pre-tax) = g \text{ x } (R_d\ ) + R_e \text{ x } (1-g) \text{ x } \frac{1}{(1-t)}$$

$$Cost\ of\ capital\ (Vanilla) = g \text{ x } R_d + R_e \text{ x } (1-g)$$

Where:

g is gearing

R_d is the cost of debt

R_e is the post tax cost of equity

t is the effective marginal rate of corporation tax

2 The first approach (post-tax) removes all considerations of taxation in the cost of capital, which is instead modeled as a cash flow item and considered with other operating costs. This rate is appropriate when applying a rate of return to post-tax building block cash flows. It reflects the fact that debt-holders are compensated before the payment of company tax, whereas equity holders receive compensation after company tax has been paid.

3 An alternative to this is to calculate the pre-tax cost of capital, which converts the post-tax cost of equity to a pre-tax cost of equity. Assuming that the returns estimated by the CAPM (or other methodologies) are the after-tax returns required by shareholders. In order to ensure that the cost of capital calculation provides the appropriate level of return, it is necessary to make an allowance for the corporation tax that will be paid on profit. A simple way to do this is to is to gross up the cost of equity with a 'tax wedge' adjustment equal to '$\frac{1}{1-t}$, where t is the appropriate effective marginal rate of corporation tax.

4 A third variant is the so called 'Vanilla' cost of capital, which represents a combination of the pre-tax cost of debt and the post-tax cost of equity. This is frequently used in the financial modeling of regulatory price controls. The modeling of the tax shield on interest payments will be included in the analysis of company profits. It is therefore appropriate to use the pre-tax cost

of debt and a post-tax cost of equity in the vanilla approach, which is commonly used in modeling by regulators.

5 It is important to note that all of these approaches can be made equivalent, if it is possible to accurately estimate the tax liability a company will face during the control period. However, this relationship may break down if the actual tax rate paid by the company is not equal to the statutory tax rate, which could lead to the company being over or under remunerated for its tax liabilities. It is, therefore, essential to use the effective marginal rate of corporation tax for the company in question taking into account any tax relief the company may be subject to.

Appendix 4: Alternative approaches to CAPM

1 Whilst CAPM is the most common methodology for assessing the cost of capital, a range of alternative approaches have been identified in the literature.

2 The dividend growth model (DGM) assumes that the current share price of a quoted business is equal to the present value of all future expected dividend payments. Therefore, given the current market share price and future dividend growth rate expectations, the cost of equity implicit in a share price can be determined as follows:

$$R_e = \left(D_0 \text{ x } \frac{1+g}{P_0}\right) + g$$

Where:

R_e is the post tax cost of equity

D_0 is the current dividend

g is the dividend growth rate (assumed to be constant)

P_0 is the current share price

3 The main limitation of the DGM model is that it relies on an accurate view on the dividend growth forecast and can be very sensitive to the assumed dividend growth. Finding accurate and accepted forecasts of future dividend growth is challenging, with the potential sources being the company themselves or from equity analysts. Due to these difficulties, the DGM has been rarely used by regulators as the primary method for calculating the cost of equity. It has, however, been used as a check on the cost of equity derived from the CAPM.

Fama and French Three factor model

4 Some academic tests of the CAPM have shown that the explanatory power of CAPM does not always perform well. The most prominent contradiction is the "size effect" discovered by Banz[26], who found that the average returns of smaller US companies appeared high relative to the returns implied by the

[26] Banz, R., "The Relationship Between Return and Market Value of Common Stock", *Journal of Financial Economics* 9: 3-18, 1981.

CAPM framework. This was further investigated by Fama and French[27], who found that two variables, size and book-to-market value, capture most of the explainable variation in stock returns not captured by the CAPM framework. Fama and French proposed the Fama French three-factor model (FFTM) that attempts to adapt the conventional CAPM by adding additional explanatory variables for size and book-to-market value. In practice the FFTM has rarely been used by regulators, largely because it is challenging to derive a theoretical basis for including addition variables in CAPM. In addition there is evidence to suggest that the small firm effect may be diminishing over time.

Arbitrage pricing theory

5 Arbitrage pricing theory (APT) extends the three-factor model of Fama and French even further to include an unlimited number of explanatory variables and beta coefficients for factors such as: GDP, inflation and interest rates. Whilst APT is intuitively attractive, it is rarely used in practice due to problems with data availability and the specification of an appropriate model.

[27] Fama, Eugene F.; French, Kenneth R. "Common Risk Factors in the Returns on Stocks and Bonds". *Journal of Financial Economics* 33, 1993.

Appendix 5: Components of CAPM

1 This appendix sets out in detail the three key components of CAPM, namely:

- The equity market risk premium
- The risk free rate
- The equity beta

2 The analysis presents: the background on each component, estimation issues and the approaches taken by international airport regulators and Indian regulators in other sectors.

Equity market risk premium

3 The equity market risk premium (EMRP) represents the premium of the market portfolio above the risk free rate, which represents the additional return investors require in return for the additional risk associated with investing in equities instead of risk free assets.

$$EMRP = R_m - R_f$$

Where:

R_m is the expected return on the market portfolio

R_f is the risk free rate

4 In this section the methodology to estimate the expected return on the market portfolio (R_m), which represents a well diversified portfolio of equity assets, is considered. The risk free rate is discussed in the next section and is subtracted from the expected return on the market portfolio.

Issues in estimating an equity market risk premium

5 Whilst the EMRP is conceptually straightforward, there has been a significant amount of literature on how it should be estimated and applied. In addition, the estimation of the EMRP is further complicated by the impact of the global economic downturn which has had significant impacts on financial markets globally. It is also important to consider the equity market risk premium in the context of emerging market economies, such as India, and the approaches that can be used to overcome estimation issues in emerging economies.

Estimation of EMRP

6 There are two approaches for estimating the EMRP: historic (ex-post) or forward-looking (ex-ante). The historic approach is the most frequently used and looks at the actual returns on equities over a period of time. An issue of particular importance is the method used to estimate these historic returns and the use of arithmetic versus geometric means. The arithmetic mean approach averages the individual annual returns over the period being considered, where as the geometric mean calculates the annual compound growth in returns over the period. Of the two approaches arithmetic means will give a higher estimate of the EMRP; however there is a significant amount of academic debate over which of the two approaches in most appropriate.

7 In addition, there are also issues associated with the base stock index to use to calculate returns, for example should a wider stock market index be used or should the most frequently traded stock index be used. There are also debates around the impact on globalisation and the EMRP, with some supporting the argument that the EMRP has been reducing in recent decades due to increasing opportunities for international diversification.

8 An alternative to the historic approaches is to look at forward-looking approaches to estimating the EMRP, which will be informed by a combination of historic data and future market views. There are two basic approaches used:

- Bottom-up: This approach forecasts the rates of return by projecting future company dividends (as per the dividend growth model) and comparing with the current market value of the share. Individual shares can then be aggregated to give a forward looking view of the market.

- Top-down reviews: This approach uses surveys of investors expectations on future market returns to estimate the equity risk premium.

9 Both of these approaches have their strengths and weaknesses and have been applied in developed markets, with forward-looking approaches yielding slightly lower results than for historic approaches. Summarising the results of historic and forward-looking approaches has been attempted in the book 'The Real Cost of Capital'[28], which tentatively concludes that the following EMRP can be applied in developed markets.

[28] The Real Cost of Capital, Ogier, Rugman, Spicer, 2004

Exhibit 12: Summary EMRPs for developed markets

	Historic	Forward-looking
EMRP	4%-8%	2%-6%

Source: Table 3.5, The Real Cost of Capital, Ogier, Rugman and Spicer, 2006

EMRP and the global financial crisis

10 It is worth noting that the results presented above were estimated before the global economic downturn and are for developed economies.

11 The onset of the credit crisis in August 2007 and the global economic downturn that followed have had significant impacts on financial markets. For example, Professor Aswath Damodaran estimates that there has been a significant increase in the Indian equity risk premium from 7 to 11% during the financial crisis.[29] In addition, evidence reported in De Paoli and Zabczyk[30] suggests that the size of this risk premium depends on whether the economy is in a period of stagnation or prosperity. In particular, investors seem to require higher premium during economic slowdowns than during booms. Further, evidence by Cochrane and Piazzesi[31] argue that the EMRP increases by almost 20 per cent in period of crisis, coming back to its previous "normal level" after three years after the end of the recession. This approach was used in the recent determination of cost of capital for OffWat[32] in the UK, where an EMRP was calculated for crisis and non-crisis scenarios. Under the crisis scenario the EMRP was estimated as being 20% higher than under a non-crisis state resulting in an EMRP 1% higher under the crisis scenario.

EMRP and emerging market economies

12 Estimating the EMRP in emerging market economies can also be particularly challenging due to a lack of consistent and reliable data on stock market returns or the lack and availability of consistent views on investors future expectation of equity returns.

13 An alternative approach is to consider the addition of a country risk term to the EMRP for mature markets. Country risk represents the downward risks

[29] http://aswathdamodaran.blogspot.com/2009/01/data-update-for-january-2009.html

[30] Why do risk premia vary over time? A theoretical investigation under habit formation, De Paoli and Zabzyk, Bank of England Working Papers, 2009

[31] Bond Risk Premia, Cochrane and Piazzesi, 2005

[32] Cost of Capital and Financeability at PR09, Europe Economics, 2009

on investments which have the potential to affect all investments in a particular country, for example a war or political unrest. These risks can be particularly significant in emerging market economies and require an adjustment to EMRP as follows.

EMRP emerging country = Base EMRP for Mature Equity Market + Country Risk Premium

14 An alternative to this approach would be to factor in the country risk premium to the risk free rate, which is discussed below. It would, however, be important to avoid double counting the country risk premium by including in both the EMRP and the risk free rate.

Estimation of EMRP in India

15 There are relatively few estimates of the Indian EMRP from academic and other sources. Exhibit 13 summarises some recent estimates of the EMRP in India:

Exhibit 13: Summary of Equity risk premium calculations for India

Source	Equity risk premium	Notes
Principles of Corporate Finance, Brealey and Myers[33]	9-13%	Sensex Returns 1978 – 2005 and 1991 - 2005
J Varma and S Barua, June 2006[34]	8.75 (Geometric) 12.5% (Arithmetic)	Researchers own index constructed over 25 years to estimate EMRP.
R Mehra January 2006[35]	11-12.6%	Mean returns on BSE 100 and Sensex over period 1991 – 2004
Aswath Damodaran, January 2009[36]	11%	Country risk premium added to EMRP for US and adjusted by relative equity market volatility.

Source: As listed

16 As can be seen from this analysis, there is a relatively large range associated with estimates of the EMRP in India of between 8.75% and 13% depending on the: approach, the data source, and the time period considered. This suggests

[33] Principles of Corporate Finance 8e, Brealey, Myers, Allen, Mohanty, 2008

[34] A first cut estimate of the equity risk premium in India, J Varma and S Barua, June 2006

[35] The equity premium in India, R Mehra, January 2006

[36] http://aswathdamodaran.blogspot.com/2009/01/data-update-for-january-2009.html

that there is an additional premium in the Indian context compared to the estimates of the EMRP in developed markets.

Approach by Indian regulators to estimating equity risk premium

17 In its 2005 guidelines TAMP use an estimate of 7.15% of the equity market risk premium, based on "a review of the various methods for calculating the risk premium in India's context." In the electricity sector, the CAPM approach has not been used, therefore regulators have not estimated the EMRP.

Approach by international regulators to estimating equity risk premium

18 International regulators have considered three main sources of data for assessing the EMRP:

- Regulatory precedents: Using the EMRP taken during previous regulatory determinations.
- Third party estimates: Using estimates of EMRP derived by academics or investments banks, for example the UK Competition Commission (and other UK regulators) has used evidence on historic stock market returns from Dimson, Marsh and Staunton[37] in assessing the EMRP.
- Surveys: Using surveys of investors and market participants to understand investors' views of the EMRP.

19 From theses estimates the majority of analysis has focused on ex-post approaches (i.e. using historic data) rather than ex-ante (i.e. based on forward looking expectations), reflecting the inherent difficulty of accessing unbiased views of investors expectations of equity returns. In the UK regulators have used estimates of the EMRP in the range 2.5 to 5%. The Irish Commission for Aviation Regulation (CAR) use a value of 6%, based on arithmetic returns on Eurozone stock markets.

Risk free rate

20 The risk free rate (RFR) is the rate of return that can be earned on a risk free investment i.e. an investment that offers a fixed return, with no possibility of any variation in return. Whilst it is recognized that there are no investments that are absolutely risk-free, it is conventional practice to determine the RFR by examining the yield on "safe" liquid financial instruments that are considered to have negligible default risk

[37] Dimson, E, Marsh, P and Staunton, K (2007), *Global Investment Returns Yearbook, 2007*, London: ABN AMRO/LBS

Issues in calculating a RFR

21 Two common benchmarks for measuring the RFR in developed capital markets are:

- Nominal RFR measured by yields on conventional treasury bill and government bonds;
- Real RFR measure by using index-linked government bonds (if these are available).

22 In emerging market economies, such as India, the yields of government market bonds are also likely to include some measure of default risk. India's local currency rating of Baa3 suggests that there is default risk in the Indian rupee bond, and that some of the observed interest rate can be attributed to this risk[38]. Whilst it is justifiable to include this risk within the RFR, there is potential for the country specific default risk to be double counted in the equity risk premium, which will include an adjustment for the risk of holding shares of a particular country (see paragraph 14). One possible solution to this problem is to break risk free rate into two components: as shown below:

Risk free rate in Indian rupees = Market interest rate on rupee bond – Default Spread India

- Market interest rate on rupee bond: is yield on a GoI issued government bond and can be measured by looking at the yields of different maturity GoI bonds.
- Default Spread India - It is possible to infer the default spread by looking at the default spread of bonds issued by other countries with a similar credit rating (denominated in dollars or euros) with those of bonds issued in developed markets. Estimations of the spreads for various different sovereign class ratings are given below:

[38] What is the risk free rate? A search for the basic building block, Aswath Damodaran, December 2008

Table 3: Default Spreads by Sovereign Ratings Class – September 2008

Rating	*Sovereign Bonds/ CDS*	*Corporate Bonds*
Aaa	0.15%	0.50%
Aa1	0.30%	0.80%
Aa2	0.60%	1.10%
Aa3	0.80%	1.20%
A1	1.00%	1.35%
A2	1.30%	1.45%
A3	1.40%	1.50%
Baa1	1.70%	1.70%
Baa2	2.00%	2.00%
Baa3	2.25%	2.60%
Ba1	2.50%	3.20%
Ba2	3.00%	3.50%
Ba3	3.25%	4.00%
B1	3.50%	4.50%
B2	4.25%	5.50%
B3	5.00%	6.50%
Caa1	6.00%	7.00%
Caa2	6.75%	9.00%
Caa3	7.50%	11.00%

Source: What is the risk free rate? A search for the basic building block, Aswath Damodaran, December 2008

23 Hence, by applying the relevant adjustment for the default spread, it is possible to estimate the Indian nominal RFR by using the latest available data on government bonds of various maturities.

24 To estimate the real RFR it is necessary to adjust it for expectations of inflation by applying the Fisher equation[39].There are three existing measures of inflation in India: Consumer Price Index (CPI), GDP deflator and the Wholesale Price Index (WPI). A paper on the appropriate inflation rate for capital index bonds by the RBI[40] recommends that WPI should be the preferred inflation index, as it has more frequent availability and a wider coverage.

[39] The Fisher equation specifies the relationship between real interest rates (r), nominal interest rates (i) and expected inflation (p) in the following formula: $(1 + r) = \frac{(1+i)}{(1+p)}$.

[40] Discussion paper on capital indexed bonds, Reserve Bank of India, May 2004

Approach by Indian regulators to estimating risk free rate

25 The RFR was considered by CRISIL[41] in its assessment of the cost of capital for Central Sector Utilities, which notes that the "secondary market yield on Indian government debt offers the best proxy for a riskless rate of return". The analysis considers the yield curve for 10 year Indian government bonds. The overall conclusion was that CERC should use the "latest three to four month average of yield to maturity on government securities with a residual time to maturity of 8 years as the risk free rate of return". It is important to note that this analysis is nearly ten years old and will need to be reviewed in its application.

26 In its determination of the cost of capital in the ports sector, TAMP consider the weighted yields on GoI bonds having a residual maturity of 10 years considered over the period July – December 2004, which gives a yield of 6.35%.

Approach by international regulators to estimating risk free rate

27 The approach by UK regulators to estimating the risk free rate has been to look at the real yields on 5, 10 and 20 year index linked gilts, with a value between 2% and 3%. In particular, the CAA in it recent determination for Stansted Airport found a risk free rate of 2% by calculating the average yields on UK index linked gilts with maturities of 3, 5 and 10 years.

28 In an analysis for the UK Office of Gas and Electricity Markets, PricewaterhouseCoopers LLP[42], recently, looked at the following to estimate the RFR:

- Index linked gilts
- Real RFR implied in yields on nominal yields
- Real RFR embedded in interest rate gilts

29 The preferred measure of the real RFR is index linked, which take into account investors expectations of inflation. PricewaterhouseCoopers LLP estimated a real RFR in a range of between 2% to 2.5% for the UK. The Irish CAR takes a broadly similar approach using the yields of German Government bonds with a maturity between 5 and 15 years as a proxy for the risk free rate, giving a point estimate of 2.5%.

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[41] Cost of Capital for Central Sector Utilities, CRISIL, April 2000

[42] Advice on the cost of capital analysis for DPCR5 – Office of Gas and Electricity Markets, PricewaterhouseCoopers LLP, December 2009

Equity Beta

30 The equity beta represents the factor in the CAPM by which the EMRP is multiplied by and is an expression of the risk of a share relative to the market. It is important to note that the equity beta measures the systematic risk of a firm, which is the risk that cannot be diversified away by holding a balanced equity portfolio. The equity beta of a stock is calculated by the following formula:

$$Equity\ Beta\ (\beta_e) = \frac{Covariance\ (R, R_m)}{Variance\ (R_m)}$$

Where:

R is the return on the equity investment in a single stock

R_m is the expected return on the market portfolio

Asset betas

31 A further distinction of betas is between the equity and asset betas. The equity beta considered above will take into account the financial risk associated with the chosen capital structure of a company (i.e. its gearing). Whilst an increase in gearing will not affect the systematic risks equity holders are exposed to, it does increase the total risk for equity holders, as debt holders have a contractual claim on the firm's assets if the firm is liquidated. Hence, if there are two companies that face identical risks and one is more heavily geared, ceteris paribus, it would be expected that the firm with a higher gearing would have a higher equity beta. However, given that in such a situation, one would expect the underlying asset beta to be the same, it is necessary to adjust the equity beta for gearing to find the asset beta. Another component that can potentially be part of the equity beta is the debt beta, which measures the exposure of debt holders to systematic risk.

32 The common formula applied to derive the asset beta is:

$$Asset\ Beta\ (\beta_a) = g \times \beta_e + (1 - g) \times \beta_d$$

Where:

g is the gearing

β_e is the equity beta

β_d is the debt beta

33 The betas that are estimated from market data will be equity betas. It will, therefore, be necessary to convert these to asset betas while performing comparisons with other companies. It is important to note that when estimating the cost of capital, estimates of the asset beta will need to be re-levered to reflect gearing of the firm.

34 Internationally, some regulators have also considered the introduction of a debt beta to the calculation. For example in its calculation of the cost of equity for BAA, the CAA currently assumes a debt beta of 0.10. However, more widely the debt beta is often assumed by regulators to be zero.

Issues in estimating equity betas

35 There are two key issues in estimating equity betas. Firstly, there is an issue around the mechanics of the calculation in terms of the approach to estimating the beta equation above, for example over what period should the equity beta be estimated. Secondly, the approach that should be taken to assessing the beta where the company is not listed or there is limited data to estimate the beta. This is likely to be particularly important in the Authority's context where airports are under mixed ownership, as can be seen in Exhibit 14, with no major airport being owned by an undiversified listed entity.

36 Of the companies listed below only GVK and GMR are listed on Indian stock exchanges. However these are diversified infrastructure holding groups and airports represent only part of their portfolios. For example, in FY09 airport activities accounted for 30% of GMR's net revenue and 50% of its EBITDA.[43] In addition, Fraport AG, Bidvest and Seimens are listed on international stock exchanges. Again, these are diversified businesses where the stakes in Indian airports represent a relatively small part of the overall firm.

Exhibit 14: Summary of ownership structure for major Indian airports

Airport	Ownership structure
MIAL	GVK 37%, Bidvest 27%, Airports Company South Africa 10%, AAI 26%.
DIAL	GMR 54%, Fraport AG 10%, Malaysia airports 10%, AAI 26%
GHIAL	GMR 63%, Malaysia airports 11%, Government of Andhra Pradesh 13%, Airports Authority of India 13%
BIAL	Seimens 40%, GVK 29%, AAI 13%, 13% Karnataka State Investment and Industrial Development Corporation, Unique 5%
Cochin	Cochin International Airport Limited is an entity established with equity participation from the Government of Kerala, NRIs, Industrialists, Financial Institutions and Airport Service Providers, with over 10,000 shareholders from 29 countries
Chennai, Kolkata, Ahmedabad, Goa, Trivandrum, Pune, Calicut	100% AAI

Source: Airport information

[43] GMR Investor presentation, 2009

Comparator analysis

37 Given the mixed nature of ownership within the major Indian airports a comparator analysis is likely to be required to estimate the beta for different airports. The aim of comparator analysis is to identify comparator companies which face similar business risk profiles to those faced by Indian airports. As noted above, when looking at comparators it will be important to strip out the effects of gearing and calculate only asset betas.

38 There are likely to be two sources of comparators: international and domestic sources. International comparators would include regulated airports internationally. Whilst this is intuitively attractive, there are potentially significant problems with using international comparators. Firstly, the risk characteristics of airports in different countries may be different. Airports in developed economies can have different relationships with traffic compared to airports in emerging economies, where traffic may be related to other risk factors. Secondly, for regulated airports, the nature of regulation is likely to have a significant impact on the beta.

39 Domestic comparators would cover firms / industries with similar risk characteristics to major airports. Domestic comparators could potentially include: ports, airlines, power sector, consolidated infrastructure companies and real estate companies. The relationship with regulation will also be important to consider for domestic firms / industries, with relatively few industries being subject to economic regulation.

Approach by Indian regulators to estimating equity beta

40 To determine the beta for Central Sector Utilities (CSUs), CRISIL considered a range of approaches including comparator analysis of both India and foreign comparators. CRISIL concluded that

> *"adoption of asset beta of USA or UK power sector may not be appropriate considering the differing level of maturity of the power sector and the different relative risk position of the power sector in the economy for the proxy country and India"*

41 Instead of considering foreign proxy betas CRISIL preferred method was to apply a proxy beta from power (asset beta 0.54) and refinery industries (asset beta 0.60) in India.[44]

[44] It should be noted that the cost of equity in a range of 14-16% commonly used in the electricity sector is judgmentally determined and does not relate to a specific beta estimate

42 In the ports sector, TAMP reviewed the asset betas of port sector and other domestic sector companies to estimate an equity beta of 0.84 for the ports sector.[45]

Approach by International regulators to estimating equity beta

43 For estimating the equity beta most UK regulators have undertaken a comparator analysis of UK and foreign based companies. The UK Competition Commission approach for assessing BAA's beta in its Q5 review was to estimate the beta for BAA group, which was publicly listed. The overall beta for BAA was subsequently disaggregated to estimate the betas for Gatwick, Heathrow and Stansted airports.

44 It is worth noting that the CC rejected approaches based on 'stand-alone' or 'bottom-up' methods for estimating BAA's beta. It also rejected using international comparisons of beta's from other airports around the world, with concerns that:

Other airports have different risk profiles from Heathrow and Gatwick and we are especially uncomfortable with the setting allowed returns for these two UK regulated airports in line with betas for airports that are subject to different forms of regulation or, in certain cases, no regulation at all [46]

45 To estimate the beta for individual airports, CC took BAA's beta and disaggregated into components for Heathrow, Gatwick and BAA's other businesses. In completing this analysis the following factors were examined as they are thought to influence the asset beta of individual airports:

- Demand risk: The relationship between demand and various factors including, principally, GDP
- Riskiness of airline customers: BAA has suggested that the riskiness of airlines may be linked to the riskiness of airports, if both are affected by the demand risk.
- Operational leverage: The link between fixed and variable costs can affect the overall risk of the airport. If fixed costs are high relative to total costs, then the airport is less able to reduce costs to reflect changes in demand.

[45] Applying the nominal gearing used by TAMP of 50% this implies an asset beta for ports of 0.42

[46] Competition Commission, Competition Commission report: BAA Ltd - A report on the economic regulation of the London airports companies (Heathrow Airport Ltd and Gatwick Airport Ltd), Cost of Capital Appendix F, September 2007

46 Taking evidence into account for these factors the CC judgmentally determined the relationship between the asset betas of Heathrow, Gatwick and BAA's other businesses. A cautious cross check (taking into account the caveats raised above) of these figures was performed against comparable international airports and with similar UK comparators including real estate companies, airlines and utilities companies. The asset and re-levered equity betas for UK regulated airports are given below.

Exhibit 15: BAA – Gatwick, Heathrow and Stansted airport betas

	Heathrow (March 2008)	Gatwick (March 2008)	Stansted (March 2009)
Asset Beta	0.45	0.50	0.61
Equity Beta	1.08	1.19	1.25

Source: Respective CAA decision papers

47 The Irish CAR also uses a comparator approach considering the beta estimated for BAA's London airports. The CAR concluded that Dublin airport has a similar risk profile to that of Stansted and that Stansted's asset beta of 0.61 should be adopted.

48 Regulators have also used international comparators as a cross-check on their results. For example, First Economics calculated the two year asset betas[47] for the following European airports, as a cross-check on their beta calculation for NATS.

- Copenhagen airport - 0.17
- Frankfurt airport - 0.46
- Florence airport - 0.16
- Macquarie airports - 0.55
- Vienna airport - 0.63
- Zurich airport - 1.00

49 As can be seen there is a wide range in the betas of European airports, which is likely to reflect a combination of the risks of a particular airport and the regulatory regime it is subject to.

[47] A Preliminary Estimate of NERL's Asset Beta, First Economics, March 2009

50 Prior to the implementation of light touch regulation, the ACCC used a two step approach to estimating the beta for regulated airports. As a first step, it used a comparator approach, drawing particularly on foreign airports, to derive a range (0.60 – 0.73) of asset betas for Australian airports. For the second step, it placed individual airports at the appropriate point of this range based on the risk of the airport. To do this, the ACCC looked at the income elasticity[48] of each airport as it related to each airports traffic risk. For example, airports with passenger mix that is highly responsive to changes in demand would have a high elasticity and would be placed towards the top of the beta range, compared to airports that have a passenger mix that is less responsive to changes in passenger income, which would be placed towards the bottom of the asset range. In the case of Sydney, the ACCC determined that it had a lower traffic risk and estimated an asset beta of 0.60, compared to Melbourne, which had a higher traffic risk and an estimated beta of 0.70.

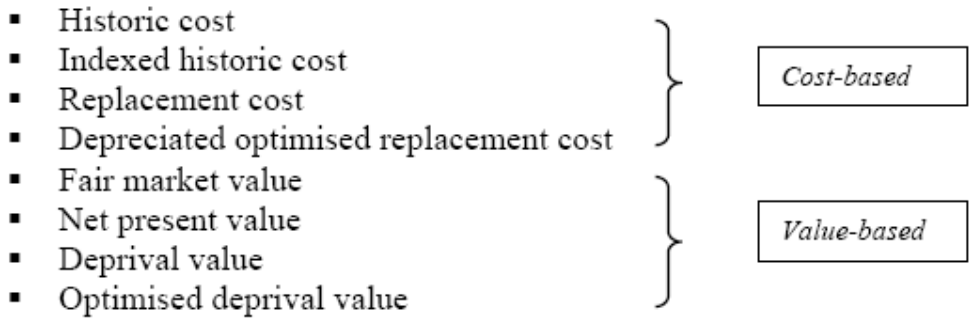
51 IATA has made suggestions regarding the calculation of beta in respect of Indian airports, specifically in the background that none of the Indian airport companies are listed in the stock market. It is IATA's view that the Authority should be able to calculate an adequate beta comparator from listed airport companies worldwide, taking into consideration the form of economic oversight, traffic forecasts etc. It has stated that it might be argued that an airport in India could be considered a "safe" asset relative to the volatility of the market, in comparison to how an asset is considered in more mature markets. As such, there might be a case for downwards adjusting the comparator airports beta. It has also noted that the comparators from other sectors, such as electricity distribution, gas and water, can be used to confirm the results obtained using the comparators approach. UK CC has noted that airport betas should be slightly higher than "utility" betas as airport could face higher changes in demand.

52 IATA has further suggested that caution must be taken when applying CAPM approaches in the Indian context as there may be issues when calculating the equity risk premium for an emerging market like India using its own stock exchange data. A suggested alternative approach could be to calculate the cost of equity in a mature market (i.e. US or UK) using conventional CAPM formula and then making an India adjustment i.e. cost of equity (India) = Cost of equity using CAPM (US) + India adjustment. India adjustment component could be the spread between the long term Indian Government bonds and the US Treasury bonds. IATA has estimated that the cost of capital for an Indian airport using the conventional approach will be around 11.2%, but could be around 10.3% if the alternative approach was used.

[48] The income elasticity measures the change in demand for a good (in this case air travel) with the change in demand of a consumer's income. This is intended to act as a proxy for the change responsiveness of a change in investor returns with a given change in market returns, as per the beta concept.

Appendix 6: Summary of approaches to initial regulatory asset base valuation

1 There are two broad approaches to RAB valuation: cost-based and value-based, which are summarised in the diagram below:



2 The approaches highlighted in the table above show that there are a range of approaches that the Authority can apply for valuing the initial RAB. The key differences between approaches are the effort required to implement, the impact each approach would have on incentives; and the accuracy and consistency of valuation.

Exhibit 16: Summary of RAB valuation approaches

Approach	Summary	Advantages	Disadvantages
Historic cost (HC)	Value RAB on the basis of the original cost of the asset, adjusted for accumulated depreciation.	Simple methodology to implement with information easily available from company balance sheet. Requires no subjective assessment of asset value.	Does not allow for revaluation of asset base over time to take account of inflation or technological changes. Tends to underestimate values of large assets with long lives.
Indexed historic cost (IHC)	Applying inflation index to historic cost valuation of asset base.	As historic cost. Does not under estimate values of large long lived assets to extent of HC.	Takes limited account of technology changes or configuration of asset base.
Replacement cost (RC)	Values RAB as sum of the current cost of replacing each asset in the RAB, adjusted for accumulated depreciation.	Will take into account current valuation of the assets and will not tend to underestimate as per HC or IHC approaches.	Does not take account of whether existing assets in the RAB are the optimal assets to produce the output. Requires replacement cost assessment of whole asset base, with significant regulatory cost implications.
Depreciated optimized replacement cost (DORC)	Values RAB as the replacement cost of 'optimised' assets, which would most efficiently reproduce the capacity and service levels of existing assets.	Generate efficient pricing signals as valuation of RAB reflects cost of additional capacity.	Complex to calculate and requires subjective judgments on optimal asset configuration.

Approach	Summary	Advantages	Disadvantages
Fair market value (FMV)	Values the RAB at the price at which the current assets could be sold in a competitive market.	Uses the market to obtain reliable information on an asset's current value.	May be challenging to get accurate market assessment on current asset valuation. Range of valuation may be wide.
Net present value (NPV)	Values the RAB as the sum of the discounted cash flows associated with each asset.	Links RAB to cash flows and assets valuations.	Can be difficult to accurately assess cash flows with different assets. Circularity problem linked to use of discount rate to determine RAB, which also determines value on the RAB.
Deprival value (DV)	Values the RAB as the minimum loss to the company if it was deprived of the revenue streams associated with each asset in the RAB.	Provides information on the current value of the RAB's assets.	Valuation is sensitive to assumptions made in asset and cost allocations.
Optimised deprival value (ODV)	Applies the DV approach on an 'optimised' asset base as per DORC approach.	As per DV and DORC.	Challenging and complex methodology to apply.

Source: Alternative methodologies to measure the regulatory asset base of regulated companies: Report to the Commission for Aviation Regulation, August 2001, Professor Colm Kearney, Dublin City University

Appendix 7: Consultation Protocol

1 This consultation protocol sets out the Authority's guidance on the protocol for information sharing to facilitate the process of consultation between the airports and the users. The Authority considers the scope of information to be shared under the protocol as a minimum necessary requirement to inform users with development of the airport.

2 While this consultation protocol is designed to govern the behaviour of the regulated airport operators, the Authority considers that it is appropriate that airlines and other airport users meet the airport operator's reasonable expectations regarding information required to support effective consultation. The Authority considers that the airport operators and users need to respect the agreed process and timescales when making their contributions. It is important to consider that airport operators and AUCC should aim to ensure that any delays do not unduly jeopardise airport operator's ability to deliver its investment programme or specific projects or the operational needs of users.

Airport Users Consultative Committee (AUCC)

3 The Authority proposes formation of an Airport Users Consultative Committee (AUCC) for purpose of engaging with airport operators through the process of user consultation. The composition of AUCC is proposed to be in line with the stakeholders identified in the Authority's Guidelines on Stakeholder Consultation dated 14th December 2009.

4 The above mentioned guidelines identify following stakeholders to adequately represent interest of airport users:

- Airlines: Federation of Indian Airlines (FIA), International Airport Transport Association (IATA) and Board of Airline Representatives (BAR); and the Indian registered airlines.
- Passengers: FICCI, ASSOCHAM, CII and any local chamber; Joint Secretary & Financial Advisor, Ministry of Civil Aviation and a representative of Ministry of Civil Aviation; respective State Government through the Chief Secretary; Voluntary Organisation in Interest of Consumer Education (VOICE), Consumer Education and Research Center (CERC) and Consumer Unity & Trust Society (CUTS).
- Cargo Facility Users: Local associations of Freight Forwarders, Custom House Agents etc. and apex chambers like FIEO, FICCI, CII and ASSOCHAM.

5 Airport operators shall notify and invite the above mentioned users to form AUCC as per the timeline assigned in the guidelines, regulations to be issued by the Authority. Airport operator should provide periodic update on the progress of AUCC formation within the timeline specified. In the event that

setting up of AUCC is not achieved within the specified timeline, the Authority may intervene and facilitate the process.

6 AUCC may, if it so desires, establish user focus groups within the committee to ensure fair representation of interest of a particular user community, viz. airlines, passengers and cargo facility users.

Consultation with AUCC

7 The timing of consultation should begin at a stage where outline description of the major project has been prepared by the airport operator, which means that it would be prior to any option decision or construction design. In particular, the Authority expects airport operators to begin consultation at the stage when a potential need for a project is identified, before solutions are considered, and that users should have a substantive input into the brief for any major project prior to consideration of options to meet an identified need. In some cases, consultation may need to continue through the construction phase in relation to any changes to specification or costs.

8 The information shared between airport and the AUCC should form the basis of an effective consultation process, designed to provide airport facilities to best meet the current and future needs of users. Within this process, airport operators should ensure that the information specified in this Consultation Protocol is provided to, and consulted with, users at the airport.

9 The changes in the projects, agreed with users, during the course of each price control period should be promptly highlighted with adequate transparency on such changes. This information should include, for major projects: the rationale for any material changes, which should be discussed with users before decisions are taken; and the implications of any material change, including on benefits, costs and operational activities.

10 Consultation should encompass the exchange of information and subsequent discussion between airport operators and users with the objective of achieving agreement, where possible, within an appropriate timescale before key decisions are taken to enable the successful delivery of the plan. The Authority expects that airport operators will develop a project plan that will show reasonable timescales for consultation, commensurate with project complexity. The plan will show the timing of key decisions needed to maintain project programme in line with the capital investment plan. The Authority expects airport operators to gain acceptance of the timeline by the users before moving ahead with the consultation process.

11 It is recognised that agreement may not always be achieved in the time available to progress the investments. In this background, it will be the responsibility of the Authority or any other independent agency appointed by it to act as the facilitator to provide an agreed record of the agreements reached and those areas where there has been disagreement. This record of

agreement/disagreement will also highlight the process undertaken to attempt to resolve any disputes.

Informing consultation

12 The Authority considers that for effectiveness and completeness of consultation process there will be need for two levels of information required on:

- Business Plan outlining airport's vision, strategic goals and options to achieve the operational outcomes, and
- Project specific information

Business Plan related information

13 Airport operators should provide detailed information to users to meet the requirements of the consultation protocol relating to the Business Plan. The Business Plan will form the foundation for long-term and short-term operations as well as expenditure, capital or operating, decisions.

14 The Business Plan should be prepared and updated periodically as necessary to ensure it is always a reasonably current document and can be relied on to inform consultation. It should contain projections into the next 5, 10 and 20 years.

15 The Authority expects the plan to provide the details on the following:

- A high-level overview of the business scenario impacting airport development in the future including the market segments targeted, growth drivers and capacities to be built. The business scenario may need to be specified in capacity and service terms for users to ascertain the impact on future development.
- Forecast of demand for various facilities and their growth drivers.
- Capacity requirements as ascertained from the forecasted demand for each facility planned in the future.
- Options for future development of the airport in line with the forecast demand and capacity requirements. The options should include details of cost, capacity targeted, possible impact on user charges, service quality and output tradeoffs.
- Incorporate the project level details from the project investment document, explained later, for users to understand the linkages between airport strategy and short-term development.
- Clearly highlight all the assumptions in relation to the forecasts and growth drivers and bring out the sensitivity of those assumptions in form of different business scenarios.

- Clearly demonstrate linkages with the airport master plan and periodically update any changes to the airport master plan in the business plan. The phasing or timing of investment, including the rationale, should also be clearly highlighted in the business plan document. The details provided in the Master Plan and the related Plan document normally are, Design aircraft, Site elevation and latitude/ longitude, Wind direction and strengths, Topography, natural and man-made obstacles, if any, Airfield geometry, Land Use plans, Operational area plans and Terminal complex area layouts. The terminal complex layouts include the footprint of the terminals and related buildings, roadways, major proposed facilities and existing facilities.
- Incorporate information on the asset disposals, including any of its land or building, whether through sale, partial sale, long lease or joint venture, including disposals from the airport company to other entities within its holding companies. The information should also incorporate timing of such disposals and highlight any impact on airport operations.

Project Investment File

16 The Authority expects airport operators to provide detailed project information as part of the consultation process with users. This detailed information in the form of a Project Investment File should be an evolving set of documents for each project. Airports would ensure that Project Investment Files for all major projects and for projects representing at least a majority of investment, and 90% of investment unless a reasonable proportion of users agree to a smaller proportion are subject to consultation with the AUCC.

17 A Project Investment File will include:

- Major assumptions that have been made, including the timing, cost estimates within the capital expenditure programme and the outputs.
- Cost benefit analyses of the capital investment options for both airport operator and the users and the steps taken to optimise the balance of costs and benefits. For each project, the benefits of the project may include increased capacity, encouraging demand, improved service levels, operational improvement etc. and should be quantified wherever possible.
- Forecasts of costs and other impacts for each project:

  (i) the effect on airport charges;

  (ii) the profile of the annual capital costs;

(iii) updated and auditable information showing how expenditure incurred to date relates to the latest anticipated costs of the projects;

(iv) total capital expenditure (including the phasing) and the anticipated incremental impact upon the operating costs of airport operator;

(v) specific details of alternatives considered and analysis of reasons or choosing the preferred option; and

(vi) costs associated with the project should bring out details like design requirements as well as the procurement strategy for the project.

18 The Authority would expect there to be an auditable reconciliation of the detail provided to the users on individual projects with the total proposed capital investment set out in the Business Plan.

19 The Authority recognises that the extent and level of detail of project information necessary to inform consultation will be lower for lower value projects. The level of information sharing should be determined through discussion and negotiation between AUCC and the airport.

Monitoring and compliance

20 The Authority or any independent agency appointed by the Authority shall receive periodic updates on the AUCC and airport operator consultation process, no less than three monthly unless the airport, AUCC and the Authority agree on a less frequent reporting cycle. The Authority will expect the airport and the AUCC to agree the form of minutes of meetings and progress reports but may specify its own requirements.

21 As far as possible, these reports should be agreed between the airport operator and the AUCC. In the absence of agreement, the AUCC should prepare information for submission to the Authority and the airport may provide its own report highlighting the areas of difference.

22 The monitoring and compliance of consultation process shall be measured against the agreed or approved project plan outlining timelines for user consultation submitted by airport operator.

23 At the time of a price review, these reports should provide relevant information to the Authority to inform its assessment of the capital expenditure that should be included in the RAB. However, the Authority may specify further information that it will require to be considered by the airport and AUCC.

Appendix 8: Quality of Service parameters and benchmarks

Service Parameters	Measures	Benchmarks	Monthly Percentage Rebate
Benchmarking of Service Quality through ACI ASQ survey as per the list of subjective parameters	Passenger survey rating on the standard ASQ survey compared against the target rating	3.5 for each parameter	0.5 for each parameter
Airside Facilities & Services			
Parking Bays	% time available	95%	0.5
Aerobridge (PBB)	% of aircraft movements served to meet airline request	90%	0.5
Terminal Services & Facilities			
Handling of Complaints	% of complaints responded within specified time	100% of complaints within 2 working days	0.5
Response to Phone Calls	% of calls answered within specified time	5% of calls answered within 20 seconds	0.5
Availability of Flight Information	% time available	98%	0.5
Escalators, Lifts & Travelators	% time available	98%	0.5
Automated Services	% time available	98%	0.5
Repair completion time	% of high priority complaints within specified hours	95% within 4 hours	0.5
	% of other complaints within specified hours	95% within 24 hours	0.5
Baggage Trolleys	% time available	100%	0.5
Facilities for Disabled Passenger	% time availability of wheel chairs	100% within 5 minutes	0.5

Service Parameters	Measures	Benchmarks	Monthly Percentage Rebate
	% time availability of assistance for disabled	100% within 5 minutes	0.5
Security Check	Waiting time in queue	95% of passengers < 5 minutes	0.5
CIQ	Checking time in queue	95% of passengers < 10 minutes	0.5
Check-In	Maximum queuing time	Domestic, Economy: 15 minutes Domestic, Business: 5 minutes International, Economy: 20 minutes International, Business/first: 5 minutes	0.5
Baggage Delivery	Time taken for bag delivery from aircraft arrival	Domestic – First bag 10 minutes, last bag 30 minutes International – First bag 15 minutes, last bag 40 minutes	0.5
Passenger Arrival (International)	Time taken from aircraft arrival to kerbside	95% < 45 minutes	0.5
Passenger Arrival (Domestic)	Time taken from aircraft arrival to kerbside	95% < 35 minutes	0.5