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Airports Economic Regulatory Authority of India

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

New Delhi: 22nd December, 2009

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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