CIVIL AVIATION AUTHORITY

Final report on a study of Heathrow's cost and revenue allocation

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EXECUTIVE SUMMARY

This report has been prepared for the Civil Aviation Authority (CAA) by PA Consulting Ltd. It concerns the cost and revenue allocations mechanisms applied by Heathrow Airport.

The objectives of the study are to assist the CAA to understand fully the policies and mechanisms that Heathrow applies to cost and revenue allocation and how these impact on the outcome of economic regulation and, specifically in line with the CAA's primary duty, the users of air transport services. The focus of the study is on the objectivity with which Heathrow allocates expenditure between opex and capex and how it allocates costs between its different revenue streams such as airport charges, other regulated charges and other non-regulated charges.

Heathrow has a range of accounting policies covering the main risk areas addressed in this report, notably capitalisation and depreciation. For externally provided works, goods and services, allocation is performed at the first stage of the procure-to-pay process when a requisition is raised. At this point, the general ledger account code, business unit, cost centre, organisation, etc. are specified and entered into the Oracle Enterprise Suite management accounting tool. Other than through the leadership and logistics process, staff costs are allocated ex ante to activities based on an estimate of the proportion of time that they are expected to expend on particular activities. Given this process, there is a risk that allocations may be unreliable and/or inconsistent.

Heathrow has provided extensive management accounting data, in the form of monthly trial balances at general ledger account level covering the period from January 2009 to December 2016. As might be expected for such a large range of data, use of the data fields is inconsistent and sometimes missing. However in order to review data across a full regulatory period and to put into context any exceptional periods of accounting, it was necessary to analyse this full range of data.

The first stage in the validation of the trial balance data was to reconcile with statutory accounts. This was achieved for 2014; the first full data set provided. However, as the baskets of costs reported in statutory accounts vary from year-to-year, this reconciliation has proved difficult for other years. Heathrow provided a key for changes from 2014 to 2015 to facilitate reconciliation between these two years. Reconciliation between other years is understood to not be feasible due to changes made to cost centre structures.

Based on the analysis performed, albeit with only partially validated data, the main risks are:

- Potential inconsistencies in allocation at the outset of the procure-to-pay process caused by a potential lack of adherence to standard operating procedures underpinning higher level policies
- Capitalisation of staff costs, which increased markedly in 2013 around the boundary between the Q5 and Q6 quinquennia. This may have been due to T2-readiness work, such as training or the introduction of new systems prior to the opening of the new terminal, making comparisons between the two periods more challenging
- Related party transactions carry a risk for all organisations using them and Heathrow had a number of such transactions from 2012 through to 2015. These therefore warrant further investigation as the work undertaken to date has not been able to assess the degree to which this risk may or may not have been realised. They are however subject to internal and external audit and these reports could be consulted initially.

These risks are indicators of where the CAA may wish to seek further information from Heathrow. This would allow both parties to evidence the reasonable allocation of costs and revenues and provide confidence that these risks have been minimised.

Heathrow Comment:

Heathrow adheres to a robust governance and control framework that oversees the appropriate allocation of its costs and revenues and operates a strong and effective internal control environment through its policies, processes, controls and systems.

Heathrow’s financial processes and key controls are subject to an Internal Controls over Financial Reporting (ICFR) Programme and in addition, processes are independently audited by both Heathrow’s Internal Audit function and the appointed external auditors, Deloitte LLP.

Allocation of expenditure - whether Capex of Opex, is selected at the outset of the Purchase to Pay process at the point of the requisition being raised. An Oracle Project (OP) number is required to generate a Capex Purchase Order and these are raised to a balance sheet account and assigned to projects.

Capitalisation of staff costs - the report references a marked increase in the capitalisation of staff costs in 2013. This is factually incorrect and explained. The report already recognises the reason for this variation. “It is understood that this is due to an organisational change bringing staff from LHR Airports into Heathrow Airport Limited. These staff do not appear in the figures above prior to 2013 but do feature in the years 2013 to 2015. The treatment of these costs with regards to capitalisation appears to have been consistent throughout, and it is the *insourcing* to HAL that creates the step-change seen above, as opposed to any change in policy.”

Related Party transactions - these are collated and reported in accordance with Heathrow’s procedures, are presented to the Heathrow Audit Committee on a quarterly basis, disclosed in the Statutory Accounts and externally audited.

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1.1 General

This report has been prepared for the Civil Aviation Authority (CAA) by PA Consulting Limited under contract number 2522. It concerns initial study to investigate Heathrow Airport Limited’s (HAL’s) cost and revenue allocation mechanisms.

1.2 Background and objectives

1.2.1 Context

The Civil Aviation Authority (CAA) is responsible for the economic regulation of Heathrow Airport Limited on a five-yearly (quinquennial) cycle. Under the Civil Aviation Act, the CAA's single, primary duty in this regard is to further the interest of the users of air transport services, which, in the airport context, concerns the range, availability, continuity, cost and quality of airport operation services. The current regulatory controls (the sixth quinquennium (Q6)) are due to expire on 31 December 2018, although the CAA has made formal notice of the intention to extend the period for one year.

In preparation for the establishment of next control period, termed H7, the CAA has launched a programme to investigate the most appropriate regulatory arrangements to be applied to Heathrow. The CAA has executed a number of consultancy studies in support of this programme to provide information on specific aspects of Heathrow's processes and activities. These studies have addressed:

- Cost and revenue allocation
- Capital expenditure (capex) governance review
- Top-down airport benchmarking
- Operational expenditure (opex) efficiency review
- Review of commercial revenues.

This document reports on the first of these studies to address Heathrow's **cost and revenue allocation** policies, processes and mechanisms.

1.3 Project scope

The scope of this work is:

1. Understanding Heathrow’s management accounting systems, data sources and production of regulatory accounts
2. Data gathering
3. Data reconciliation
4. High level review of risks
5. Risk based data analysis

1.4 Structure of the document

The document is structured as follows:

- Section 2 describes the objectives and scope of the study, highlighting the regulatory context and rationale as well as providing the list of regulatory risks that the study is investigating

- Section 3 describes Heathrow’s management accounting and allocation systems and processes
- Section 4 highlights the quantitative analysis that it has been possible to perform during the course of this work
- Section 5 provides the emerging conclusions of the study, an initial risk assessment and the recommendations for further work
- Appendix A catalogues the data requested from Heathrow to enable the study to be performed, the date provided by Heathrow and the data gaps where it was not possible to collect data
- Appendix B contains heat maps documenting the use of account codes and business units by level of transaction from 2009 through to 2016.

2 OBJECTIVES AND SCOPE

2.1 Introduction

This section provides an introduction to and overview of the project. Section 2.2 highlights the overall objectives, section 2.3 explains the regulatory context in which the project is being performed and section 2.4 lists the potential risks to be investigated.

2.2 Objectives

The objectives of the study are to assist the CAA to understand fully the policies and mechanisms that Heathrow applies to cost and revenue allocation and how these impacts on the outcome of economic regulation and, specifically in line with the CAA's primary duty, the users of air transport services. The focus of the study is on the objectivity with which Heathrow allocates expenditure between opex and capex and how it allocates costs between its different revenue streams such as airport charges, other regulated charges and other non-regulated charges. The specific objectives of the study are to:

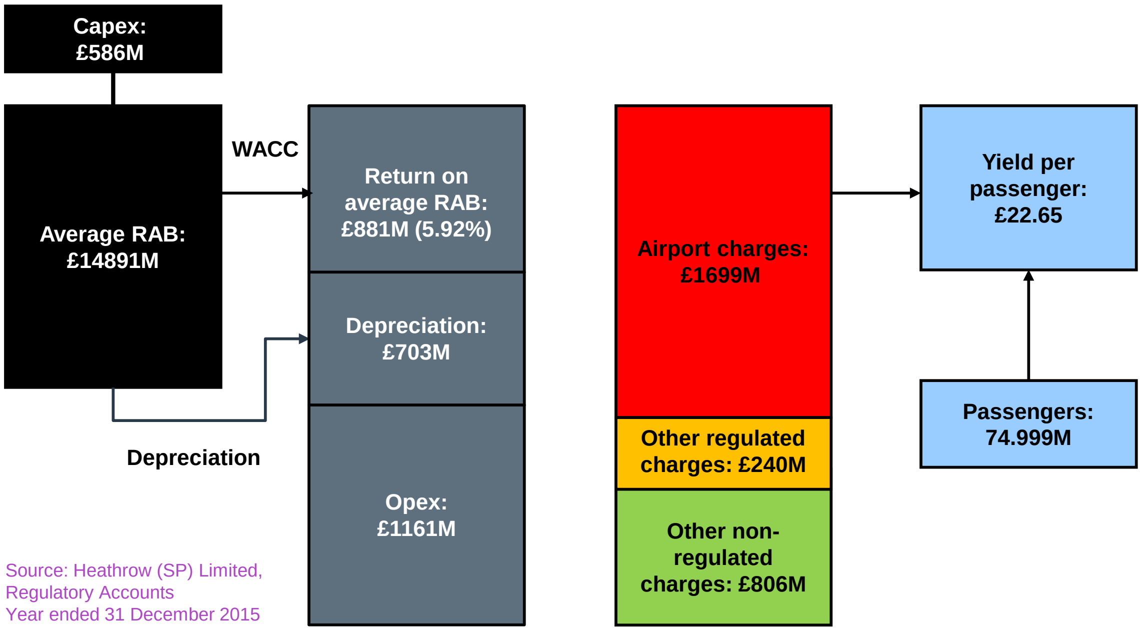
- Review the approach to segregating and supplying cost and revenue data in high-risk areas
- Determine whether the approach to cost and revenue allocation in high-risk areas is consistent with best practice regulatory economic principles such that regulatory submissions are transparent, accurate and reliable
- Identify cost and revenue drivers used in high-risk areas and understand how these have changed over time and based on the underlying activities
- Identify allocation processes that appear to be inaccurate, outdated or subject to poor delivery (i.e. where the process of allocation is unclear and therefore results in a subjective assessment of cost area).

The degree of **risk** associated with Heathrow's cost and revenue allocation processes and the potential **impacts** of the risk being realised depends on the approach being applied to economic regulation. It is, therefore, necessary to have a thorough understanding of the regulatory principles being applied.

2.3 The regulatory context

The CAA applies a single-till, regulatory asset base (RAB) regulatory model to Heathrow, calculated using a standard regulatory building block approach. The price control is set as a price cap per passenger. The building black approach is illustrated in the following graphic using financial figures taken from Heathrow's 2015 regulatory accounts.

Figure 1: Building block model with actual values from Heathrow's 2015 regulatory accounts



The building blocks within the model are:

- The regulatory asset (RAB)
- The capex, which feeds the RAB
- The return on the RAB (cost of capital)
- A depreciation allowance (driven the by RAB)
- The opex
- Airport charges, including charges for departing passengers; aircraft landing charges and aircraft parking charges
- Other regulated charges, including: baggage and check-in; fixed electrical ground power (FEGP); utilities; handling passengers with reduced mobility; and staff car parking and security documentation
- Non-regulated charges, including: retail; car parking; and food and beverage.

The allowable costs are made up of the return on the RAB, depreciation and opex. In the single till approach, the revenue from non-regulated charges and other regulated charges are subtracted from the allowable costs to derive a revenue requirement for airport charges. This is then used, divided by the passenger forecast, to define a maximum revenue yield per passenger (price cap). An annual efficiency factor is applied to the price cap within the regulatory control period.

As the price cap is set on a passenger forecast, a correction factor is applied to the price cap two years in arrears

2.4 Risks that could arise

2.4.1 Allocation between opex, capex and other revenues

Description of risks

This risk is an aggregation of a number of individual risks and is associated with the inaccurate, inconsistent or unreliable allocation of costs to the categories of capex, opex and other revenues. This may result in dilution of the impacts of the regulatory regime, higher than anticipated profits and non-transparent cross-subsidy across activities.

In simple terms, the incentives for the Airport are to reduce opex below the assumptions made by the CAA in setting the price cap and, subject to satisfying governance requirements, to maximise the RAB through approved capex. This will increased operating profit and maximise the return on the RAB.

Material impacts of risk realisation

There are many categories of cost that fall on the boundary between opex and capex and are open to interpretation and classification. The challenge here is to understand Heathrow's definition of the boundary between opex and capex and to ensure that definitions:

- Are consistent with standard accounting practices
- Have been applied consistently and reliably within and across the regulatory control periods.

Similarly, shifts in allocation of cost and/or revenues between activities related to airport charges or other activities might distort the desired effects of the regulatory regime. For example a mis-allocation of costs to the category *other regulated charges* would impact on the revenue generated by that category and potentially enable higher overall revenue to be generated within the price cap.

2.4.2 Allocation at either side of price control period boundaries

Description of risks

The price cap is set on a cyclical basis, usually at five year intervals. The CAA uses information provided by the Airport to set the price cap. Here the risks are that:

1. Costs and/or revenues are inflated or deflated through out-of-the-ordinary accruals or pre-payments
2. Different allocation mechanisms are used before and after the price control begins.

The overall objective of this type of regulatory gaming would be to maximise costs and minimise other revenues prior to the price control point to secure the highest possible price cap. Immediately after the price cap is applied, the objective would be reversed: to minimise opex (but not capex) and to increase other revenues.

Material impacts of risk realisation

The impact of risk number 1 above would be to distort the baseline against which the price determination is made, most likely by inflating costs and reducing other revenues. The impact of risk 2 would be to change the balance of cost and revenues between the categories after the price determination is complete, potentially diluting the impact of the regulatory regime and increasing profits.

2.4.3 Allocation to and from related parties

Description of risks

A related party is a person or entity that is related to the entity, in this case Heathrow, which is preparing its financial statements. Heathrow's accounts show a number of related party transactions for the accounts starting in 2012 through to the latest accounts for 2015. For year ending 31 December 2015, the accounts indicate the following related party transactions:

- **Purchase of goods and services:** Ferrovial Agroman, Amey Community Limited, HETCo (a joint venture between Ferrovial Agroman and Laing O-Rourke) and Heathrow Finance plc
- **Sales:** Harrods International Ltd, Qatar Airways
- **Commitments:** Heathrow Finance plc, Qatar Airways.

In addition, the accounts cite exemption from the requirements of IAS 24 ‘Related Party Disclosures’ under FRS 101 from disclosing related party transactions with entities that are wholly-owned subsidiaries of FGP Topco Limited. Therefore at best it is not clear and unlikely that the related party transactions listed above represent the complete set. Furthermore, the means by which related party transactions flow through and are included in the regulatory accounts is not clear nor is the level of related party transactions before 2012.

Material impacts of risk realisation

The principal risks associated with related party transactions are associated with the reduced transparency they can carry in an organisation's accounts:

- Allocations of costs or revenues to related parties can potentially be influenced to benefit the related parties outside Heathrow's regulatory structure
- There is a lack of transparency:
  - Related party transactions can be offset against recharging group operational costs giving the appearance of a reduction in intra-group costs when they might be increasing
  - Related party transactions may give stakeholders the impression of price discipline through competition whereas this is not really the case
  - Related party transactions may include an element of profit or loss instead of being a pure allocation of cost or revenue.

> Heathrow Comment:
>
> With reference to Related Party transactions, these are collated and reported in accordance with Heathrow's procedures, are presented to the Audit Committee on a quarterly basis, disclosed in the statutory accounts and externally audited. Heathrow adheres to a robust procurement governance framework for the external provision of works, goods and services and contracts are negotiated on an arms-length basis and in a competitive environment.

2.4.4 Gaming at financial year end

Similar to the risk at the boundary between price control periods, costs, revenues and allocation methods could be gamed by:

- Using accruals or pre-paying beyond normal practices
- Changing allocation mechanisms across the financial year boundary
- Bringing forward capex to inflate the RAB as quickly as possible.

Although this is unlikely to have the same scale of effect as similar activities at the boundary between control periods, it might bring some advantages by playing the year-on-year evolution of the price cap and/or the passenger adjustments made two years in arrears.

2.4.5 Allowable security costs

If cost increases or decreases that result from changes to security standards exceed a cumulative deadband figure of £19M, they are passed through to the average revenue yield per passenger as described in the price control conditions[1].

The determination of the increase or decrease in costs by a change in security standards will not only depend on direct security costs but could also be influenced by allocated costs. As the allowable

[1] Licence granted to Heathrow Airport Limited by the Civil Aviation Authority under section 15 of the Civil Aviation Act 2012 on 13 February 2014. Consolidated version of 19 July 2016, section C1.4

security cost directly influences the price cap, it is advantageous to the Airport for this quantity to be as large as possible.

2.4.6 Depreciation policies - allocation of assets to depreciation types

Depreciation based on the RAB has a direct influence on airport charges and the price cap: all other things being equal, the higher the depreciation the higher the passenger charge. The approach to depreciation is described in Heathrow (SP) Limited's annual accounts that define the depreciation period by asset type, e.g. terminal buildings are assigned a life of 20 to 60 years, runway surfaces are assigned a life of 10 to 15 years, rail rolling stock is assigned a life of eight to 40 years, etc.

In calculating depreciation it is vital that assets are classified in the correct depreciation type - noting that some asset types have a considerable range between minimum and maximum life - and that this classification is applied consistently over the period of the asset.

> Heathrow Comment:
>
> Policies are regularly renewed and of specific reference to the context of this study is the Heathrow Property, Plant and Equipment (PPE) accounting policy which covers the capitalisation of costs and depreciation profiles. This Policy, among other aspects, sets the determination of costs that are eligible for capitalisation

2.4.7 Allocation between core and development capex

Heathrow's licence draws a distinction between *core* and *development* capex. Capex projects transition from development to core on passing Gateway 3 (the critical investment decision) and are treated differently in the calculation of the price cap. This difference means that allocation of costs to development and core capex projects may have a difference on airport charges and that the time that the project passes Gateway 3 could also impact airports charges.

2.4.8 Charges for other regulated services

In addition to airport charges, a number of other specified facilities are subject to economic regulation. These facilities are those that are referred to as other regulated services:

- Check-in desks
- Baggage systems
- Services for passengers with reduced mobility (PRM)
- Staff car parking
- Staff ID cards
- Fixed electrical ground power (FEGP)
- Pre-conditioned air
- Airside licences
- Waste, recycling and refuse collection
- Taxi feeder park
- Heating and utility services (including electricity, gas, water and sewerage)
- Facilities for bus and coach operators
- Common IT infrastructure
- Heathrow's contribution to the funding of the Airline Operators Committee (AOC).

As part of the licence condition, Heathrow has to report annually on the cost allocation method used for these activities, the pricing principles that are applied and actual costs and revenues generated.

3 HEATHROW SYSTEMS AND PROCESSES

3.1 Introduction

This section provides an overview of Heathrow's management accounting system:

- Section 3.2 describes the structure of the management accounting system and the roles played by Oracle Enterprise Suite (EBS) and SAP
- Section 3.3 describes the allocation process and the main policies including capitalisation and depreciation
- Section 3.4 draws some conclusions concerning the structure of the systems.

3.2 Accounting policies

Heathrow's accounting system is covered by a number of policies as illustrated in the following figure. The information is accurate at the time of the review, during April 2017, however a number of these were due to be updated and reviewed by the end of 2017.

Figure 2: Heathrow's accounting policies

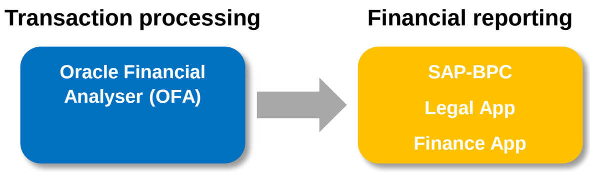
Policy	Last Approved by Directorate
Accounting for Contributions and Government Grants for Fixed Assets	12 Dec 2014
Accounting Policy	16 Mar 2015
Bank and Dealing Mandate Policy	22 Feb 2016
Capitalisation Policy	16 Mar 2015
Capitalised Interest Policy	12 Dec 2014
Debt and Liquidity Management Policy	22 Feb 2016
Depreciation & Revaluation Policy	19 Dec 2014
Disposal and Retirement of Fixed Assets Policy	12 Dec 2014
Foreign Currency Management Policy	22 Feb 2016
Interest Rate and Inflation Risk Management Policy	22 Feb 2016
Investment Management Policy	22 Feb 2016
Policy for Insurance Procurement and Settlement of Claims	21 Jan 2014
Professional Consultancy or Advisory Services Provided by Audit Firms	12 Dec 2014
Tax Policy	27 Oct 2015

Standard operating procedures (SOPs) have been provided in support of the above policies, though the effectiveness of these have not been reviewed within the scope of this work.

3.3 The structure of Heathrow's accounting system

HAL uses a combination of Oracle and SAP systems to allocate, process and report cost and revenue. Oracle Enterprise Suite (OES) is used to process transactions, whilst the SAP-BPC system is used for reporting. There are SAP-BPC applications – legal and financial.

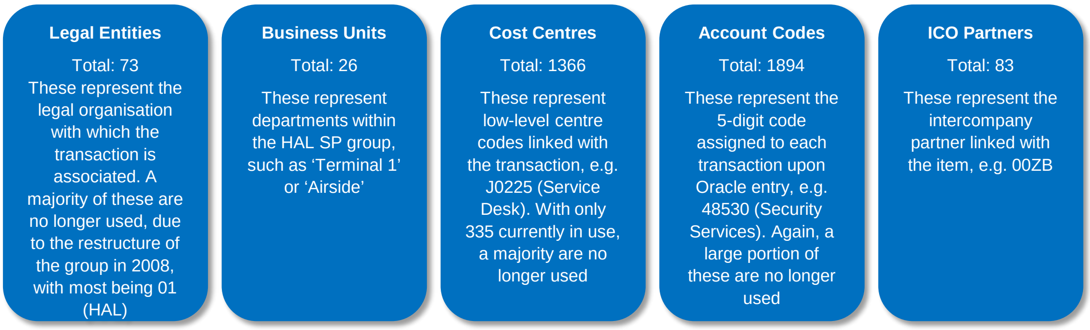
Figure 3: HAL management accounting systems



3.3.1 Oracle Enterprise Suite

Within Oracle, the general ledger code string comprises six segments, only five of which are used. These five segments are: Legal Entity, Business Unit, Cost Centre, Account Code and Intercompany (ICO) Partner as illustrated in the following figure. The sixth segment is spare. During Oracle entry all the segments must be filled, with some sections being pre-populated by the system upon validation.

Figure 4: Oracle accounting structure



HAL has a detailed approach to the classification of costs and revenues. There are almost 1900 different account codes and 1400 different cost centres. However, many of these are not currently in use, as historic codes entered on the system are not removed. A detailed list of each of the contents of each segment with associated descriptions can be found in Appendix A.

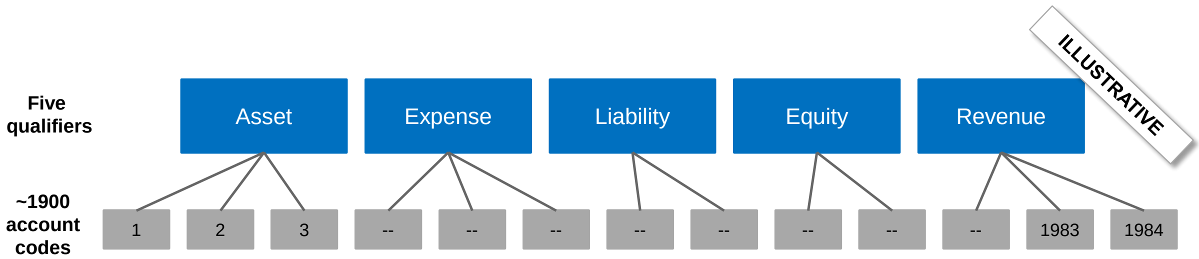
Heathrow Comment:

For the purpose of historical reporting across the Quinquennia Heathrow does retain cost centre codes however they are disabled which prevents Users creating new postings and therefore eliminates any risk. With reference to Figure 3, Heathrow uses Oracle Enterprise suite (OES).

Within Oracle, each of the account codes is uniquely:

- Associated with an Oracle parent that consolidates similar account codes into groups, e.g. the *electricity, and water and sewage* accounts are grouped under the parent, *utilities.* Some account codes do not have parents
- Mapped onto one of five qualifiers: asset, expense, liability, equity or revenue, as illustrated in the following figure.

Figure 5: Illustration of mapping account codes to qualifiers

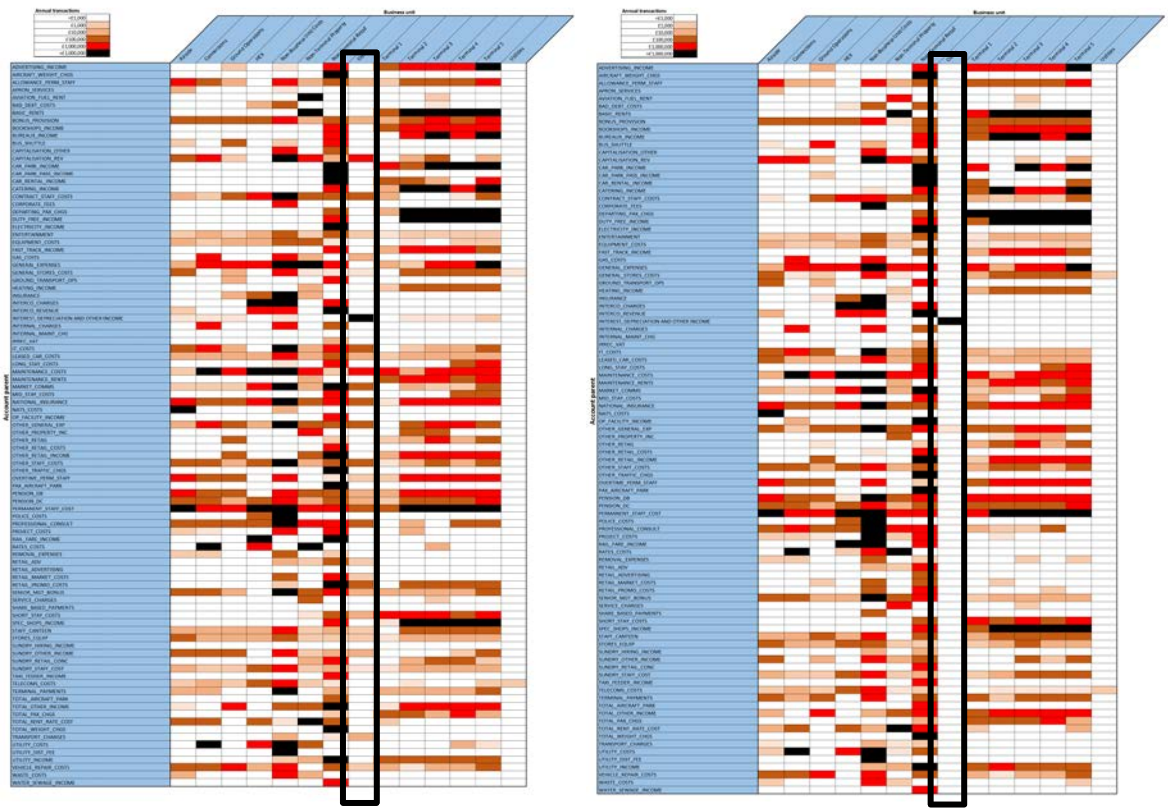


In theory, it is possible to associate any element within each of the EBS segments above with any other element within any of the other segments, i.e. any business unit can be linked to any to any cost centre to any account code. However, clearly in practice there are stronger associations between some business units, costs centres and account codes. These associations can change over time.

3.3.2 Mapping transactions to accounts and business units

The following figure shows, as heat maps, the level of transaction by business unit and account parent (grouping of account codes) from 2015 and 2016. The changing use of the *Other* business unit (highlighted by the black boxes) is clearly visible in one of the columns closes to the centre of each heat map. The same figures are available in Appendix B for the years 2009 through to 2016.

Figure 6: Volume of transactions by business unit and account, 2016 (left) and 2015 (right)



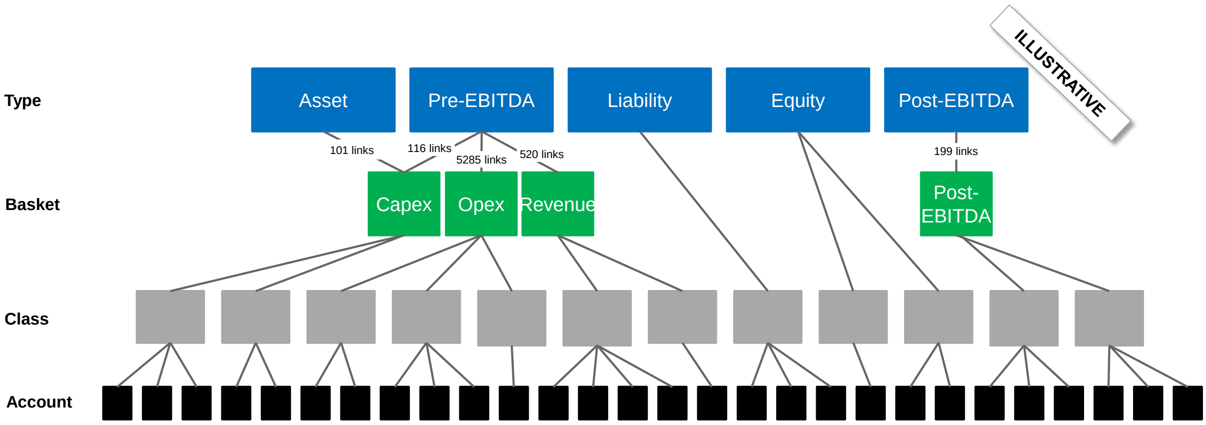
3.3.3 SAP-BPC

The SAP-BPC system is used to report finance data using two applications – legal and financial. The data structure within SAP-BPC is similar to that used in EBS, although the terminology used is slightly different. As with EBS, SAP-BPC is structured in terms of account codes, business units and cost centres with a mapping between EBS and SAP-BPC. In addition, SAP-BPC has an organisation code that is constructed by combining the Oracle legal entity, cost centre and business unit codes as illustrated below.

Figure 7: Derivation of the SAP-BPC organisation code

The data hierarchy within SAP-BPC is illustrated in the following figure.

Figure 8: Data hierarchy within SAP-BPC



Accounts are summed up into ***classes***, which are effectively account parents.

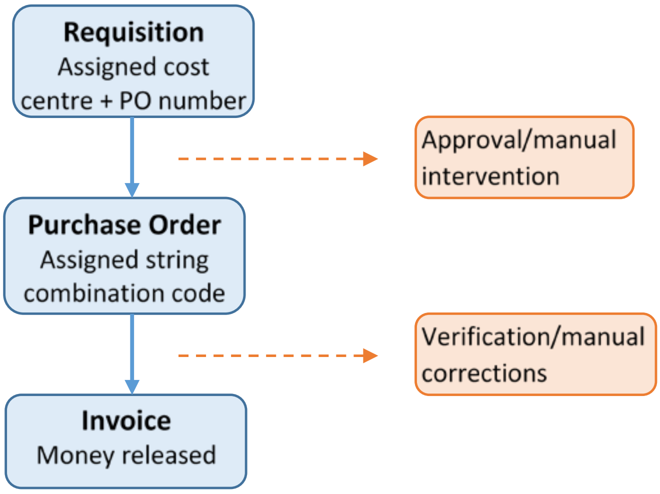
A number of classes associated with the profit and loss (P&L) account are summed up into the ***baskets***: capex, opex and revenue. Opex, revenue and part of the Capex basket are in turn summed up into the ***type*** pre-EBITDA. These types are in turn summed up into the ***type*** pre-EBITDA. Note that some accounts associated with the pre-EBITDA type are not associated with a basket. These accounts appear to be associated with internal charges. Together the ***types*** pre- and post-EBITDA comprises the profit and loss account.

The remaining ***classes*** are summed directly into the ***types*** liability and equity, which together with the part of the ***basket*** Capex that is summed into the ***type*** asset type are associated with the balance sheet.

3.4 The allocation process

For externally procured goods and services, cost allocation starts at the requirements phase of the procurement process. At the point of a requisition being raised, it is automatically assigned a cost centre and a requisition number, based on the department from which the request is raised. The user can also manually change the assigned cost centre if needed. For larger/contracted orders through suppliers, this is automatically allocated. Once approved, the requisition is turned into a purchase order (PO) and given a string combination, which includes the legal entity and business unit code. An invoice is raised upon receipt of purchase, with the money being released by HAL once the purchase has been verified and receipted, with any differences being corrected manually at this stage. This process is summarised below in Figure 10.

Figure 9: Procure-to-pay process



As a default, expenditure is automatically allocated to Opex, unless raised to a capital expenditure balance sheet account. Therefore, items that must be reallocated to capex and were not initially raised as such undergo a manual intervention by HAL finance analysts at this stage, during which items will be colour coded to initiate reallocation. The analyst can perform a 'drill down' for certain items, analysing the detail if they look wrong or require further verification.

At input, allocations are made using a unique Oracle account code. After entering a standard journal name, the user enters the string combination in the following order: legal entity, business unit, cost centre, account code, intercompany code and spare code. Options for each of these fields is reduced/limited based on the previous input, therefore reducing the chances of wrong field values being inputted. The standard journal template uses a 4-check validation process to ensure data is input correctly with associated cost-string entries, therefore reducing the likelihood of human-error at data entry stage.

Account codes input into Oracle are mapped onto the SAP-BPC management accounting system and given a legal parent code and a finance parent code (in some cases). Some account codes within this are adjusted in the ETL-PBF mappings – this is where two processes may occur

- The system creates intercompany designated accounts by adding an "I_" to the front of the account number; or
- The system consolidates the account balance with another account (i.e. rolls up the balance into another account).

> Heathrow Comment:
>
> Allocation of expenditure, whether Capex of Opex, is selected at the outset of the Purchase to Pay process at the point of the requisition being raised. An Oracle Project (OP) number is required to generate a Capex Purchase Order and these are raised to a balance sheet account and assigned to projects.

3.4.1 Staff costs

Heathrow does not operate a timesheet system. Therefore staff costs are allocated at the start of the year on a based-on-time ratio set of activities in which the staff member is assumed to be engaged during the year. The majority of staff time is allocated to Opex although some staff costs are capitalised. The following table shows the approximate breakdown of staff costs for 2008 through to

2015. These figures are approximate as they are derived from management accounts (trial balances) that do not necessarily full reconcile with statutory accounts (see section 4.2 for an explanation).

Item	2008	2009	2010	2011	2012	2013	2014	2015
Staff costs as opex (£M)	383	371	298	324	348	454	419	387
Capitalised staff costs (£M)	11	9	6	7	9	60	46	38

The table shows the sharp increase in capitalised staff costs in 2013. It is understood that this is due to an organisational change bringing staff from LHR Airports into Heathrow Airport Limited. These staff do not appear in the figures above prior to 2013 but do feature in the years 2013 to 2015. The treatment of these costs with regards to capitalisation appears to have been consistent throughout, and it is the *insourcing* to HAL that creates the step-change seen above, as opposed to any change in policy.

3.4.2 Allocation of central costs to projects

From the beginning of 2014, central costs have been managed through a central Legal and Logistics Cost Centre, as described in reference H7-CR-047. The categories are illustrated in the following figure.

Figure 10: Leadership and logistics categories

Category	Leadership or Logistics?	Comment
Heathrow Client Services (Heathrow Central Charges)	Leadership	This includes staff costs from Development, IT, Operations and other areas plus insurance charges
Commercial & Control Consultancy (T&T)	Leadership	Covers Cost & Commercial support for Development and Procurement and includes all Project Controls activity including Scheduling, Risk Management and Reporting.
Delivery Integration Services	Leadership	Integration services include early construction / build advice, scheduling, control, local logistics (not provide by the above.)
Heathrow Logistics	Logistics	Provision of all construction related logistics - Operation of the consolidated logistics centre (security screening (materials & people), delivery to site, etc.) . Also includes all Heathrow Logistics costs including property (e.g. Compass, Starlight Point) ,utilities, control posts and new build accommodation for the delivery teams
Programme Design Integration Services	Leadership	Consultancy support to coordinate the integrated schedule, maximise value and benefit across the Programme, reduce risk and drive safety and quality improvements
Commercial Audit	Leadership	Proactive commercial audit regime across the portfolio.

Costs are levied from the Leadership and Logistics cost centre to each capital project (business case) on a monthly basis. As of 2016, allocated Leadership and Logistics costs amount to approximately 13.4% of individual business case costs. The staff groups classified as leadership and logistics are defined in the previous figure.

3.4.3 Capitalisation

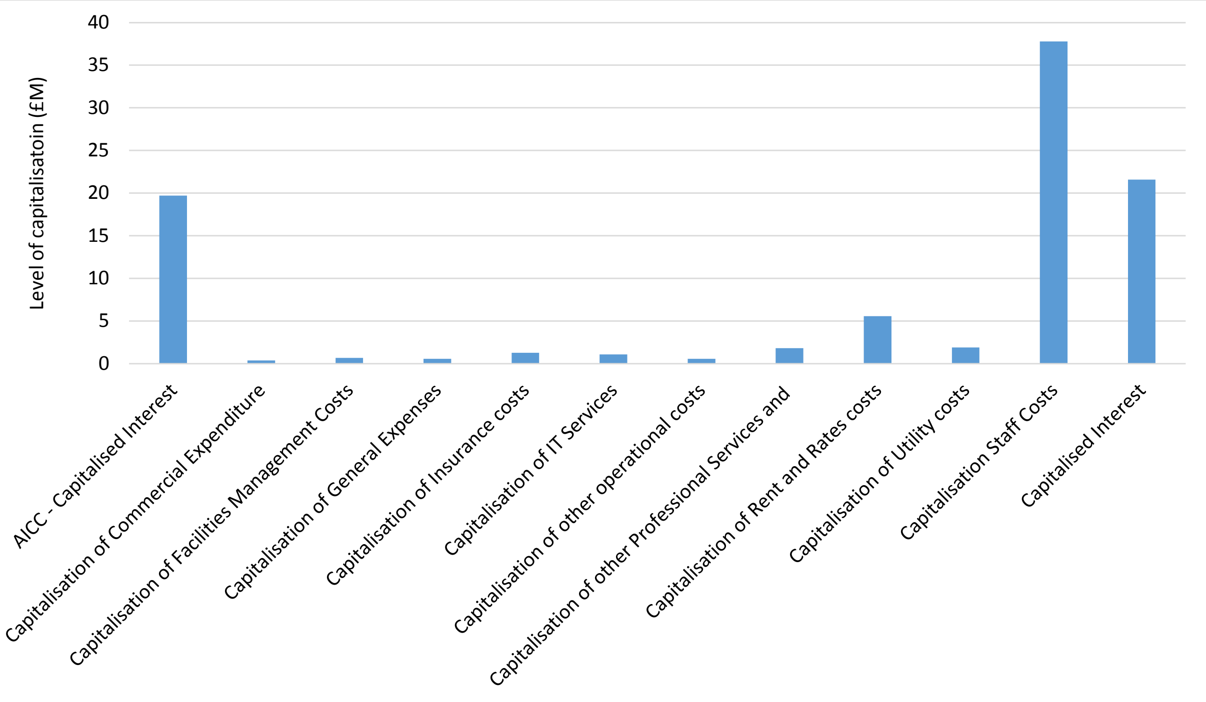
Our analysis of the process used for capitalisation is based on the Capitalisation Policy received from HAL (H7-CR-007), coupled with consultation with the appropriate Heathrow staff.

As a default, all expenditure is initially assigned to Opex. Any items requiring reallocation to Capex are manually moved when they meet the capitalisation criteria set out below, through a colour coding system. All costs eligible for capitalisation are capitalised to the balance sheet in accordance with HAL's accounting policies. The capitalisation policy can be summarised as follows:

- With certain exceptions such as stationery, purchases of goods with value over £500 are capitalised automatically
- Labour costs attributable to directly working on construction of tangible assets are capitalised, along with construction-related project management. Additional labour due to delays/abnormal circumstances during construction of assets are treated as opex
- Full staff costs are capitalised for staff who are fixed on projects, whilst some staff part-time on projects have a percentage of time capitalised based on an up-front assumption of the amount of time that they will be allocating to capital projects
- Central costs are categorised in the Leadership and Logistics cost centre and allocated across multiple projects, as described above
- Costs relating to refurbishment of existing assets are capitalised if the asset life is extended or performance enhanced, whilst repair and maintenance costs are expensed
- Opex-to-capex within-month reallocation includes capitalised staff costs and capitalised utility costs associated with capital projects
- Opex-to-capex out-of-month reallocation can occur for purchase orders that are wrongly allocated, during which the items are manually moved.

The impact of the capitalisation policy for 2015 is illustrated in the following figure, which shows that the largest contributors to capitalisation are staff costs and interest.

Figure 11: Levels of capitalisation in 2015



3.4.4 Depreciation policy

The 2014 depreciation and revaluation policy, supplied by HAL in H7-CR-006, provides an outline of the policy for the depreciation and re-evaluation of all the company's assets. The policy is outlined in the following points:

- All fixed assets must be recorded in the fixed asset register and related general ledger accounts at cost
- All these must be depreciated over their expected useful lives
- Freehold land and investment properties are not depreciated.

The expected useful life of all fixed assets are shown in Figure 13 below.

Figure 12: Useful life by asset

Fixed Asset Category	Expected Useful Life
Terminal complexes	
Terminal building, pier and satellite structures	20 - 60 years
Terminal fixtures and fittings	5 - 20 years
Airport plant and equipment:	
Baggage systems	15 years
Screening equipment	7 years
Lifts, escalators and travelators	20 years
Other plant and equipment including runway lighting and building plant	5 - 20 years
Tunnels, bridges and subways	50 - 100 years
Airport transit systems	
Rolling stock	20 years
Track	50 years
Airfields	
Runway surfaces	10 - 15 years
Runway bases	100 years
Taxiways and aprons	50 years
Rail	
Railways	
Rolling stock	8 - 40 years
Tunnels	100 years
Track metalwork	5 - 10 years
Track bases	50 years
Signals and electrification work	40 years
Other land and buildings	
Short leasehold properties	Period of lease
Leasehold improvements	Lower of useful economic life or period of lease
Plant, equipment and other assets	
Motor vehicles	4 - 8 years
Office equipment	5 - 10 years
Computer equipment	4 - 5 years
Computer software	3 - 7 years

3.4.5 Other regulated charges

Heathrow's statement on transparency and trading for its activities listed under other regulated revenue contains a high-level statement of the principles used for cost and revenue allocation. This can be summarised as follows:

- **Direct costs:** All transactions are posted to general ledger codes that correspond to cost centres within the management accounting system. Transactions that are wholly associated with an individual specific activity are the direct revenue and expenditure associated with that activity
- **Allocated costs:** Cost centres that cannot be wholly associated with individual specified activities are allocated. These cost centres are associated with pan-airport activities and include, for

example: terminal management, airport management, airside safety and security, ground operations, rates, finance, human resources, commercial, public relations, etc.

The current method of allocation used for the category *other regulated charges* is to allocate costs based on a specified percentage of the direct cost for each individual service. The drivers used in 2015 are as follows:

- Check-in desks: 12.0%
- Baggage systems: 9.8%
- Services for passengers with reduced mobility: 4.0%
- Staff car parking: 10.8%
- Staff id cards: 12.0%
- Fixed electrical ground power: 4.0%
- Pre-conditioned air: 4.0%
- Airside licences: 12.0%
- Waste, recycling and refuse collection: 4.0%
- Taxi feeder park: 12.0%
- Electricity: 4.0%
- Heating and gas: 4.0%
- Water and sewerage: 4.0%
- Bus and coach facilities: 12.0%
- Common IT infrastructure: 4.0%
- HAL's contribution to funding the Heathrow airport operators committee (AOC): 12.0%.

These allocation drivers are agreed with and overseen by the Other Regulated Charges Governance Group (ORCGG). The principal basis of allocation is that allocated costs are 12% of direct costs other than cases where the cost is a basic pass through requiring little management resource where the allocation driver of 4% has been applied. For baggage systems and staff car parking a hybrid driver of 4% has been applied to utilities and rates and 12% applied to other costs.

Depreciation is dealt with on an annuity basis. The annuity calculations are based on capital expenditure that is reasonably attributable to each activity and calculated on the assumed asset life using a rate of 8% for assets and 6% for land.

The allocation of other regulated charges is reported to the ORCGG on an annual basis through transparency and trading statements. Net over and under recovery is reported and is adjusted for in the following year.

3.5 Observations

With the exception of the recently introduced leadership and logistics cost centre and long running approach to other regulated charges, Heathrow's allocation processes are done at the point of entry to the management accounting system as part of the procure-to-pay process without reference to explicit drivers. Similarly staff costs are allocated based on up-front estimates of the resource required to undertake particular activities.

4 QUANTITATIVE ANALYSIS

4.1 Introduction

This section describes the quantitative analysis that it has been possible to do to date, based on the trial balance management accounting data provided by HAL. The section covers:

- Reconciliation of trial balances with management accounts
- Operating costs
- Capitalisation
- Depreciation
- Revenue
- Related party transactions.

4.2 Reconciliation with statutory accounts

4.2.1 General Points

Considerable difficulty was experienced in reconciling values from the trial balances to the statutory accounts. These difficulties stemmed from three issues, which only became apparent after detailed investigation into the accounts.

- **Details in the structure of the accounts change from year-to-year** leading to differences in the categories for consolidation of certain costs and revenues. These differences did not appear to be fully documented and HAL was unable to provide mappings for each of the years investigates. For example: the introduction of 'Operational' and 'Other' sub-categories within operating costs for the 2014 statutory reporting, with the removal of 'Retail Expenditure' and 'General Expenses' from the previous year's sub-categories, and no information on how these mapped across. This also occurs without any noticeable change in the BPC account structure between years.
- **There are differences in reporting categories and sub-categories between the internal management accounts and statutory accounts**. For example: 'Other' operating costs in the statutory accounts is made up of a number of operating cost sub-categories from the trial balances, the details of which are not immediately obvious and change from time-to-time.
- **Some costs are reported in trials balances but not statutory accounts.** For example, Heathrow Express intercompany ('EHX-INP') costs are reported in the trial balances for some years but not in the statutory accounts. Filtering costs associated with these resulted in some of the sub-categories reconciling correctly for some years.

Heathrow Comment:

Trial balances were reconciled to statutory accounts and were subject to external auditing. Data is not incomplete, but due to cost centre structures changing over the period of the report as part of normal business operations it's not possible to maintain consistent fields. All statutory accounts are externally audited every year.

There is a strictly controlled process at the Heathrow Business Support Centre in Glasgow for any changes to the account code structures. The BSC maintain and retain trackers of all changes requested and implemented.

4.2.2 Interpreting and formatting trial balances to allow reconciliation

HAL provided details on the breakdown of categories within the trial balances for 2014, listing out the account codes contained within each sub-category. This meant that it was possible to reconcile 2014 management and statutory accounts at detailed level but not the other years. There were four principal issues:

Issue 1:

Between years, there are often changes in which account codes will roll up into different sub-categories. This hinders the use of reconciliation instructions between years, and a lack of information on which costs are transferred to different sub-categories each year means it becomes a burdensome task to deduce where this occurs, and subsequently the reconciliation becomes complicated and unmanageable in many cases. Heathrow provided a description of the changes that took place between 2014 and 2015, illustrated in Table 1. As an example of the changes that occur, IT Costs move out of 'Maintenance costs' and into 'Other' operating costs between 2014 and 2015.

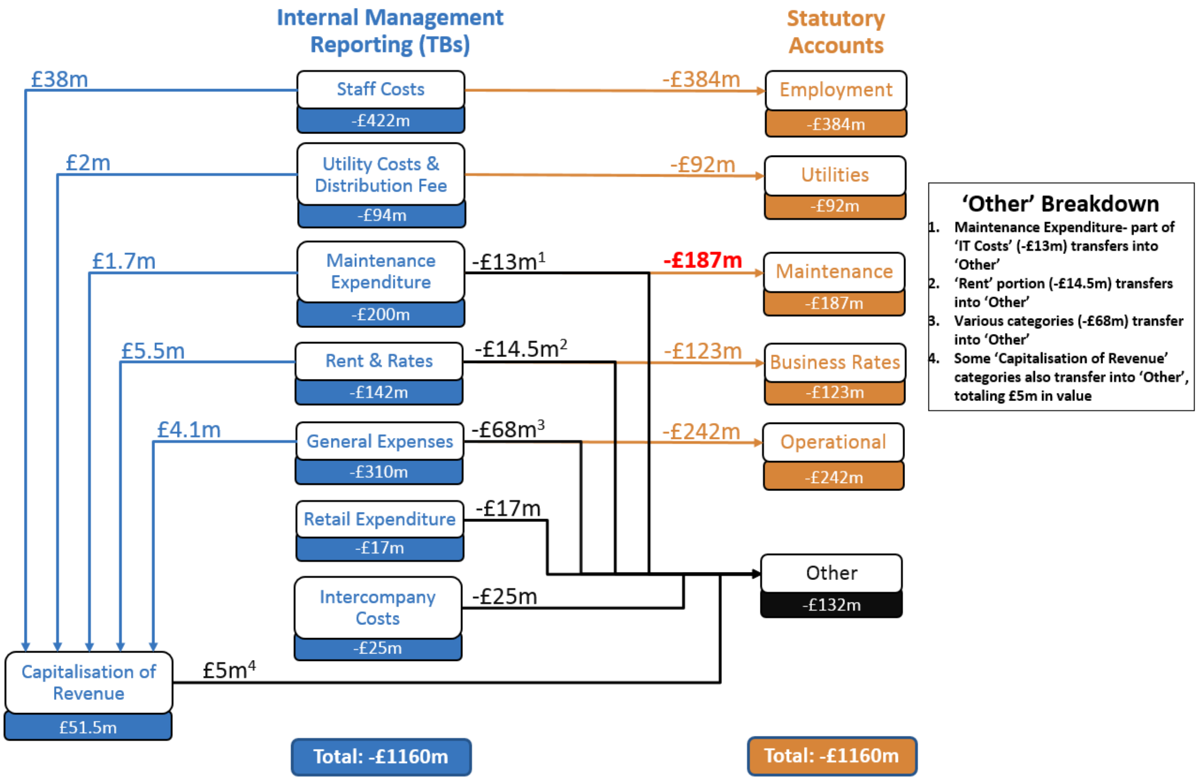
Table 1: Changes occurring between 2014 and 2015 sub-categories within 'Operating Costs'

Category	Sub-Category	Account Code	Class	Previous Parent	New Parent
OPERATING COSTS	Rents & Rates	53100	Rent, Wayleaves and Easements	TOTAL_RENT_RATE_COST	NOTHER_OP_COSTS
		53320	Property Security Costs	TOTAL_RENT_RATE_COST	NOTHER_OP_COSTS
		53330	Property Maintenance Costs	TOTAL_RENT_RATE_COST	NOTHER_OP_COSTS
	Maintenance Costs	54810	Hardware Support and Maintenance. incl Revenue costs	IT_COSTS	NOTHER_OP_COSTS
		54820	Infrastructure Support and Maintenance. incl Revenue costs	IT_COSTS	NOTHER_OP_COSTS
		54830	Software Support and Maintenance. incl Revenue costs	IT_COSTS	NOTHER_OP_COSTS
		54840	Specialised Stationery & Consumables	IT_COSTS	NOTHER_OP_COSTS
		54850	Mainframe, Managed Service and System Integration Costs	IT_COSTS	NOTHER_OP_COSTS
		54860	Upgrades Revenue Costs	IT_COSTS	NOTHER_OP_COSTS
		54870	Support & Maintenance (Outsourcing)	IT_COSTS	NOTHER_OP_COSTS
	General Expenses	55710	Staff Car Parks Costs	GROUND_TRANSPORT_OPS	NOTHER_OP_COSTS
		55840	Forecourt Operations	GROUND_TRANSPORT_OPS	NOTHER_OP_COSTS
		53250	Track Access - Performance	GENERAL_EXPENSES	NOTHER_OP_COSTS
		55420	Ticket Sales Commission	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56020	CAA Airport Licence Fees	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56810	Consolidation Centre Costs	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56911	Inter Terminal Operations (rechargeable)	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56912	Inter Terminal Operations (non-rechargeable)	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56913	Sustainable Development (Noise and Blight)	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56992	PRM costs	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56995	CAA Standards of Service Rebates	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56861	Contingency planning	GENERAL_EXPENSES	NOTHER_OP_COSTS
		56021	Passenger Ambassadors	GENERAL_EXPENSES	NOTHER_OP_COSTS
	Capitalisation of Revenue	56862	Capitalisation of consolidation centre costs	CAPITALISATION_REV	NOTHER_OP_COSTS
		56863	Capitalisation of other operational costs	CAPITALISATION_REV	NOTHER_OP_COSTS
		56022	Capitalisation of Insurance costs	CAPITALISATION_REV	NOTHER_OP_COSTS
		56023	Capitalisation of IT Services	CAPITALISATION_REV	NOTHER_OP_COSTS
		56025	Capitalisation of Commercial Expenditure	CAPITALISATION_REV	NOTHER_OP_COSTS
		NTOTAL_RETAIL_COSTS	Commercial Expenditure		NOTHER_OP_COSTS
		NSTAFF_CATERING	Staff Catering Contracts		NOTHER_OP_COSTS
		NBUS_SHUTTLE	Bus & Coach Shuttle / Operations		NOTHER_OP_COSTS
		NPOLICE_COSTS	Police		NOTHER_OP_COSTS
		NINSURANCE_COSTS	Insurance		NOTHER_OP_COSTS
		NNATS_COSTS	Air Navigation Charges		NOTHER_OP_COSTS

Issue 2:

A major cause of difficulty in reproducing values between the internal management accounts and statutory accounts arises from the differences in sub-categories between the two. An example of this is summarised in Figure 13. The categories in the statutory accounts on the right of the figure, including 'Operational' and 'Other', have no equivalent in the management account/trial balance on the left of the figure. This leads to complexities in attempting to reconcile these values, as a process of deduction and trial and error must be used to work out where certain sub-categories pool into between the internal reporting and statutory account reporting. The figure shows the adjustments that were needed to reconcile the two sets of accounts at sub-category level.

Figure 13: Reconciliation of operating costs 2015



The figure also shows how each of the trial balance cost categories contribute to capitalisation and how a small amount of this is allocates to the 'Other' category in the statutory accounts. Capitalisation accounts for £51.5m in total (blue lines) in the 2015 trial balance.

Finally, some discrepancies are due to the reported statutory account values for 2015 not having undergone any adjustments. Reconciliation has previously been against the re-presented yearly values that appear in the statutory accounts proceeding the year in question. E.g. 2014 statutory values reported are taken from the 2014 re-presented values in the 2015 statutory accounts. Therefore, the 2016 statutory report may contain more accurate 2015 values.

Issue 3:

After a lengthy process of investigating the reasons for some sub-categories not reconciling between the trial balances and the statutory accounts, it was discovered that removing those items linked to the intercompany code 'EHX-INP' for certain subcategories within the trial balances resulted in a successful reconciliation. This was also the case for removing items linked to the business unit 'Other Airports' from revenue sub-categories for 2013. It was then noted that HAL reported 'Discontinued Operations' as a reason for some values not reconciling in their 2013 accounts. The statutory accounts state how HAL discontinued operations with Stansted airport, and it seems that the costs associated with this are not included in the statutory account reported values despite the costs being included in the trial balances.

Issue 4:

HAL provided trial balances on a monthly basis for each year between 2009 and 2015. A summary trial balance for 2008 was also provided. However, the structure and contents of the trial balances varied from year-to-year and was not always consistent. For example, some data fields describing cost centres, business units and account hierarchies were omitted for some years. This meant that trial balances had to be reconstructed from other years where the data were more complete and some normalisation was not possible, most notably extracting Heathrow Express intercompany charges from years prior to 2014.

4.2.3 Notes for each year's accounts

2015

Following the process applied to the 2014 trial balances, resulted in successful reconciliation for the majority of sub-categories for the 2015 accounts: the exceptions were:

- **Revenue:** 'Other Retail Income', 'Other Regulated Charges', 'Property and Other'
- **Opex:** 'Maintenance' and 'Other' (within operating costs).

2014

After considerable effort the 2014 trial balances and statutory accounts were successfully reconciled. Detailed instructions on the reconciliation were provided. However, changes in accounts from year-to-year meant that the 2014 process was not directly applicable to other years without further detailed, bespoke adjustments.

2013

Removing items associated to the Business Unit 'Other Airports' was needed to reconcile all revenue categories. HAL stated that these differences were due to 'Discontinued Operations'. This approach did not work for 'Operating Costs' or 'Other'.

2012

Only partial data was provided in the 2012 trial balances with, specifically, the 'Account Parent' field missing. Using other years as a key, it was possible to reconstruct part of the 'Account Parent' field for the 2012 trial balances but there were some gaps remaining, meaning that reconciliation was not possible. With the limited time available, no further reconciliations were possible.

4.2.4 Summary of reconciliation process

HAL has provided management accounting data in the form of trial balances on a monthly basis for the years 2009 through to 2016 inclusive. HAL has also provided summary trial balance data for 2008. It is not straightforward to reconcile trial balance data to statutory accounts because several detailed adjustments need to be made. Because of changes to the structure of the accounts, different adjustments need to be made for different years.

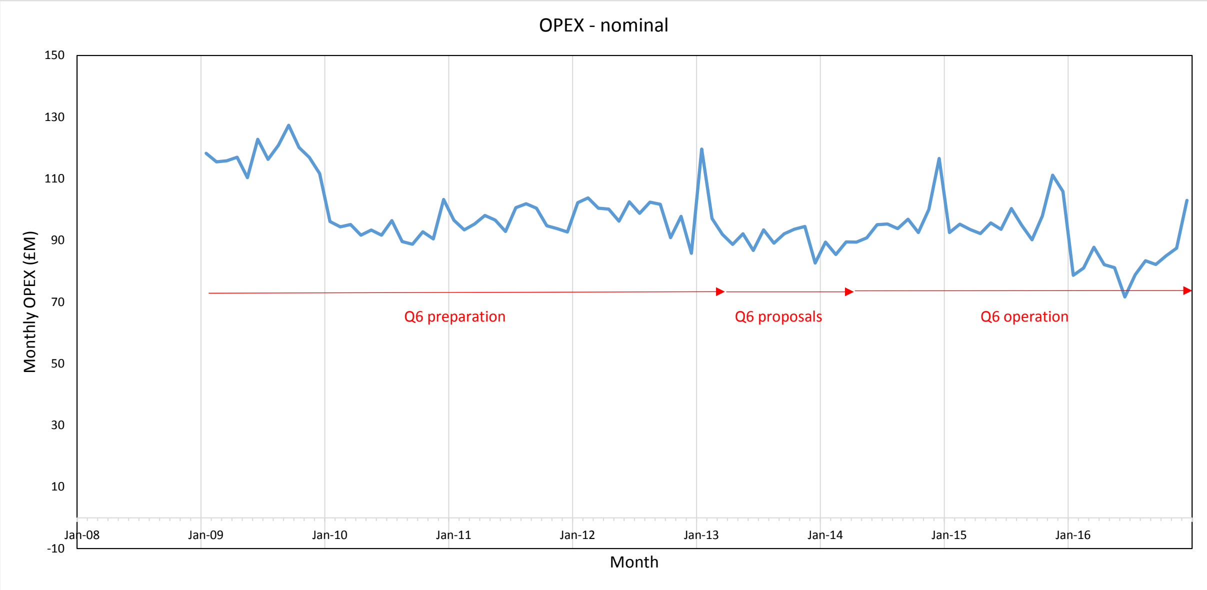
Considerable effort was expended reconciling 2014 accounts, which was the first year for which a set of trial balances was available to the project. This reconciliation was successful. HAL then provided a description of the changes between the years 2014 and 2015, which allowed a near reconciliation of the 2015 accounts. However, HAL has not been able to provide a key to describe the adjustments needed on a yearly basis so the other years have not been reconciled.

The data provided in the trial balances allows time series of costs and revenues to be assessed on a monthly interval. The following sections of the report describe some of these time series for operating costs capitalisation, depreciation and revenue. These time series have been complied on the basis of the categories used in the successful 2014 account reconciliation. However, because of changes in categories from year-to-year, the values for the other years may not necessarily reconcile to those reported in statutory accounts. However, the year-to-year comparison is as like-for-like as possible given the limitations of the data.

4.3 Operating costs

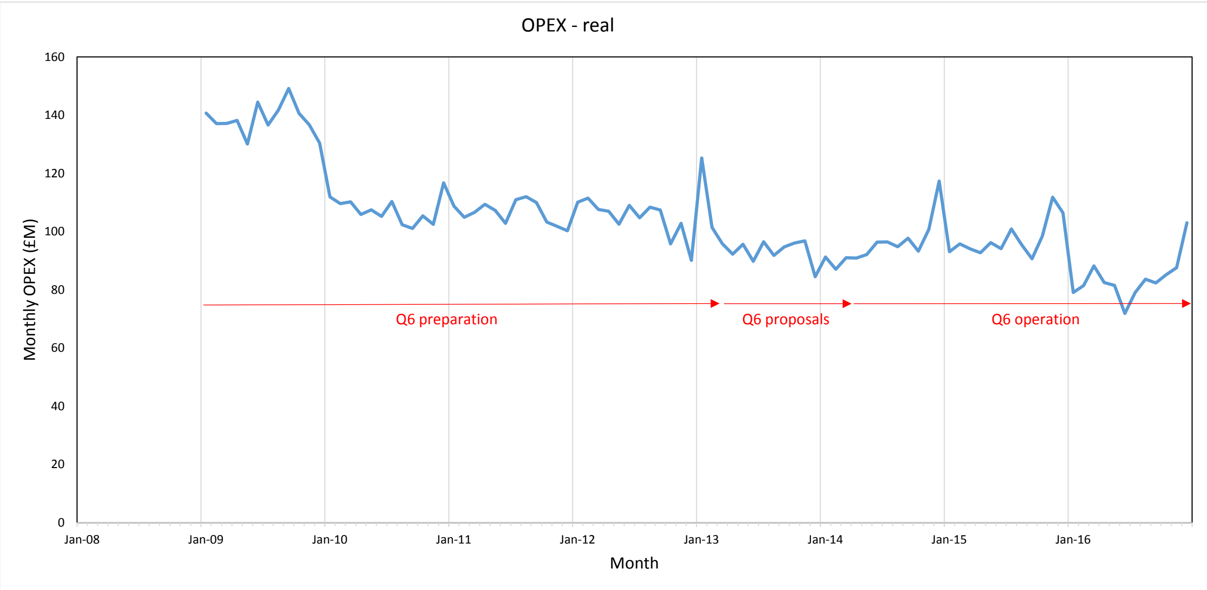
Figure 14 and Figure 15 show monthly operating costs from January 2009 through to December 2016 in nominal and real terms respectively. The figures also show the approximate periods for Q6 preparation, Q6 proposals and consultation and Q6 operation, starting on 1 April 2014.

Figure 14: Monthly opex from January 2009 to December 2016, nominal terms



The figures show a step-down in opex from 2009 to 2010 but then do not show any particular features correlated to the Q6 preparatory cycle.

Figure 15: Monthly opex from January 2010 to December 2016, real terms, 2016£



In real terms, Figure 16 indicates a gradual decrease in opex in real terms from the step down at the end of 2009 through to 2016. There is a spike at the end of 2012 and the beginning of 2013, coinciding with the end of the Q6 preparation period. Subsequently, opex reduces during the first part of 2013 and then remains relatively flat from mide-2013 to mid-2015 with another spike at the end of 2015 followed by a reduction in 2016 to the spike at the end of the year.

Opex levels are lower after the end of the Q6 preparation period than during that period, meaning that the determination would have been based on the higher opex level. However, it is not clear whether this reduction in opex is correlated with the price control periods or whether it is part of an underlying trend.

4.4 Capitalisation

Figure 16 and Figure 17 show monthly capitalisation of operating costs from January 2009 to December 2016 in nominal and real terms respectively. The figures also show the progress of the Q6 regulatory cycle.

The majority of the capitalisation is associated with the capitalisation of staff costs.

Figure 16: Monthly capitalisation of operating costs from January 2009 to December 2016, nominal terms

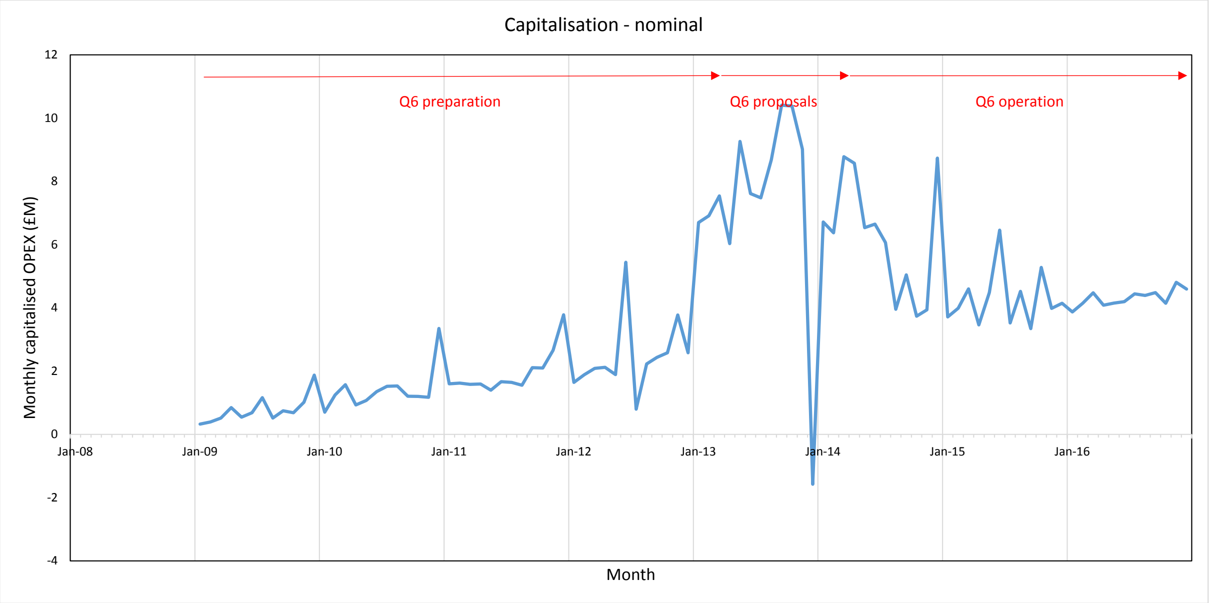
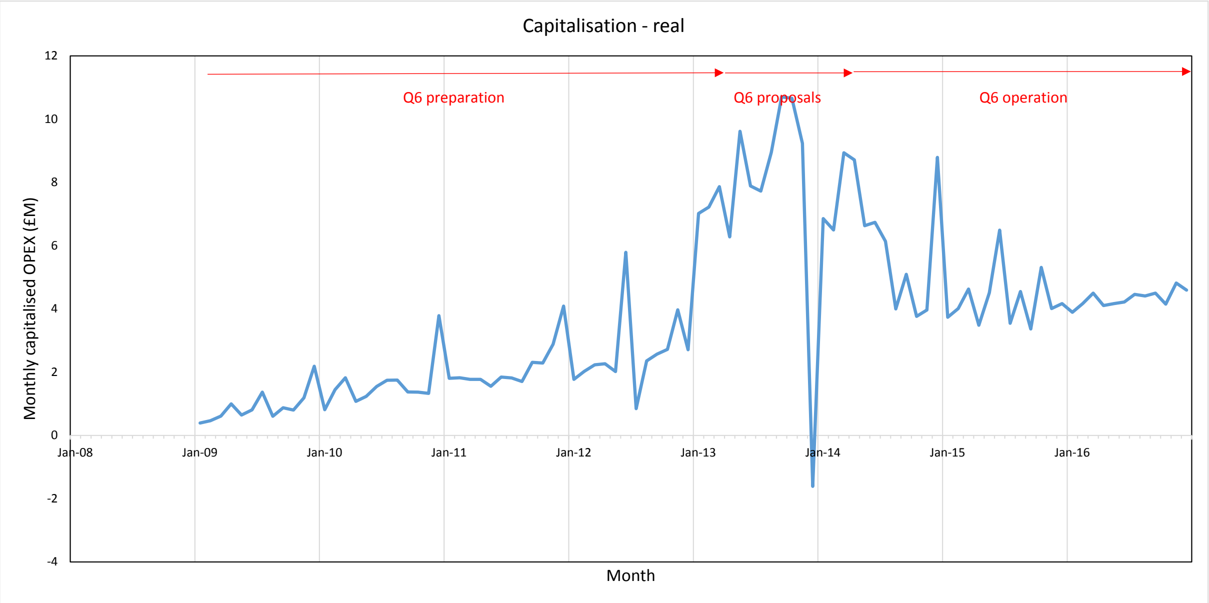


Figure 17: Monthly capitalisation of operating costs from January 2010 to December 2016, real terms, 2016£



The charts show a step up in capitalisation in January 2013 at the end of the Q6 preparatory period. There is a peak in capitalisation from January 2013 to the end of 2014, reaching a maximum in autumn 2013, corresponding to completion of the new T2 building. From January 2015 onwards there is a slight upwards trend on capitalisation from a base higher than that observed prior to the 2013-2014 peak.

Heathrow Comment:

The report already recognises the reason for this variation. “It is understood that this is due to an organisational change bringing staff from LHR Airports into Heathrow Airport Limited. These staff do not appear in the figures above prior to 2013 but do feature in the years 2013 to 2015. The treatment of these costs with regards to capitalisation appears to have been consistent throughout, and it is the *insourcing* to HAL that creates the step-change seen above, as opposed to any change in policy.”

4.5 Depreciation

Figure 18 and Figure 19 show monthly depreciation in nominal and real terms respectively

Figure 18: Monthly depreciation from January 2010 to December 2016, nominal terms

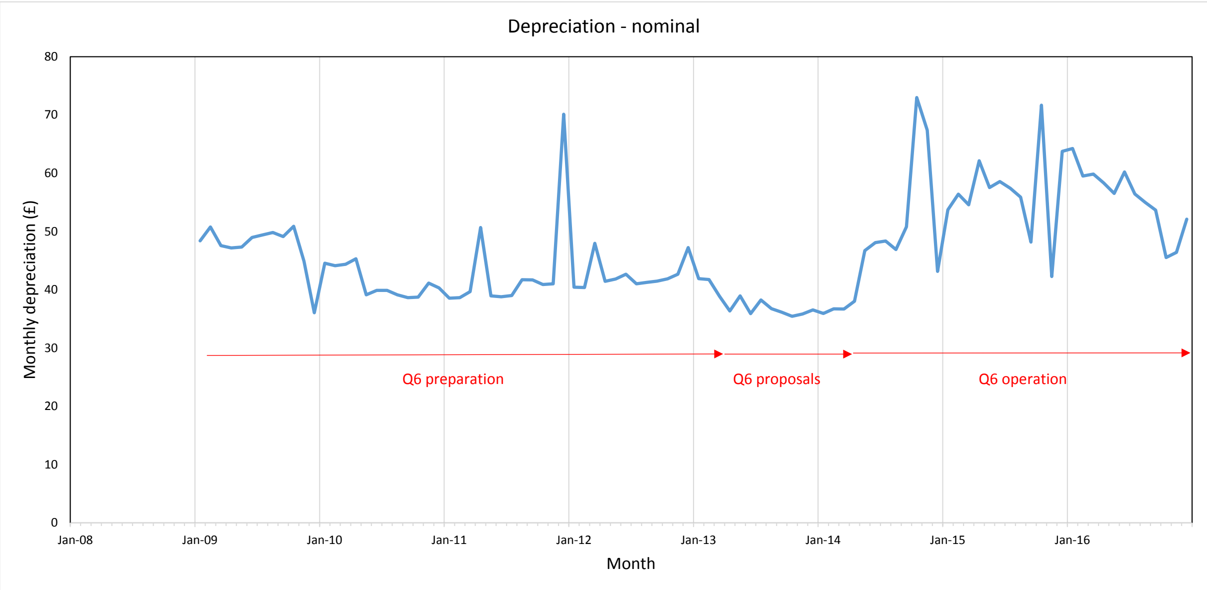
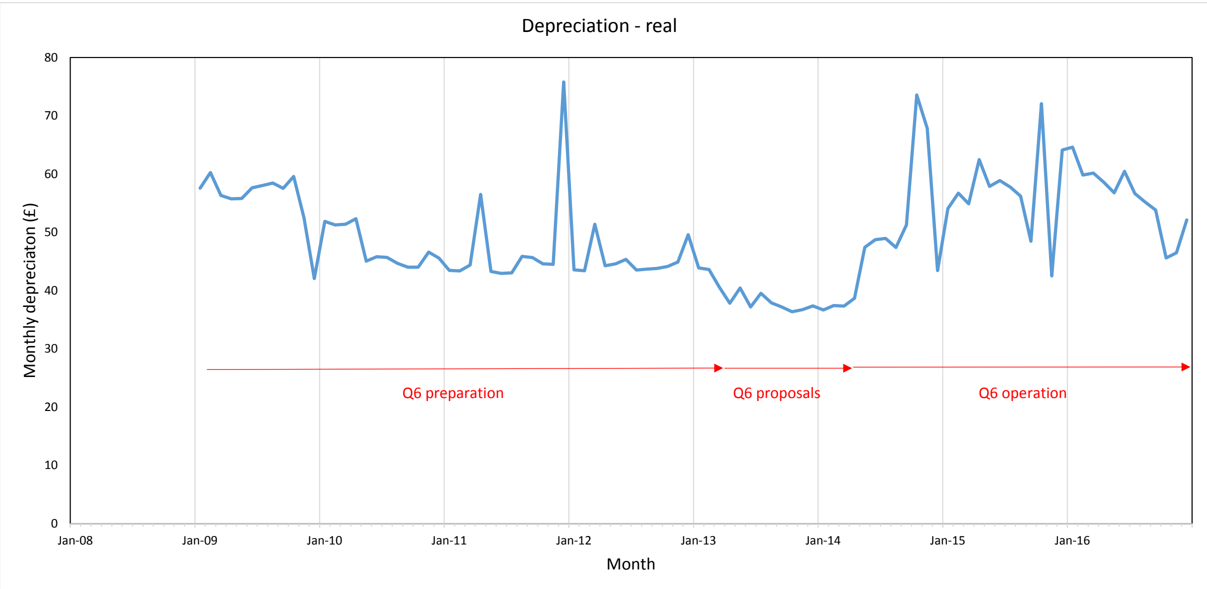


Figure 19: Monthly depreciation from January 2010 to December 2016, real terms, 2016£



Apart from a few spikes in some months, notably December 2011, depreciation shows a gradual decrease from January 2009 through to March 2014, when it increases to a broad peak centred on the middle of 2015.

4.6 Revenue

Figure 20 and Figure 21 show monthly total revenue from January 2009 through to December 2016 in nominal and real terms.

Figure 20: Monthly revenue from January 2010 to December 2016, nominal terms

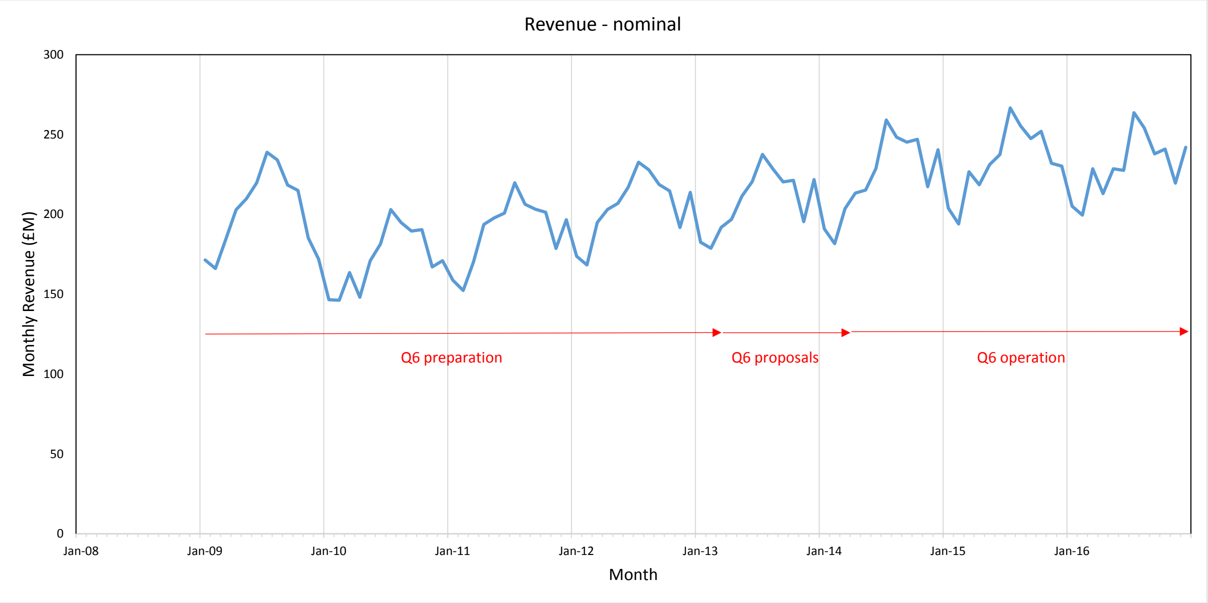
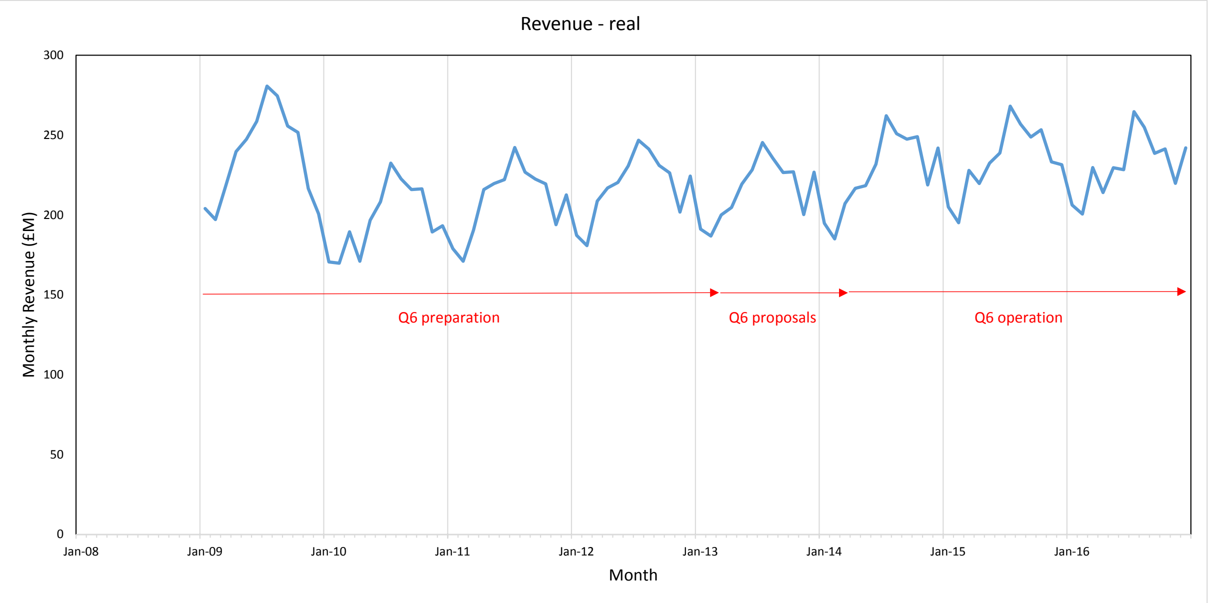


Figure 21: Monthly revenue from January 2010 to December 2016, real terms, 2016£



The figures show a fall in revenue from 2009 to 2010 followed by a gradual upward trend superimposed on a cyclical pattern showing higher revenue in summer than in winter, corresponding to periods of higher passenger numbers.

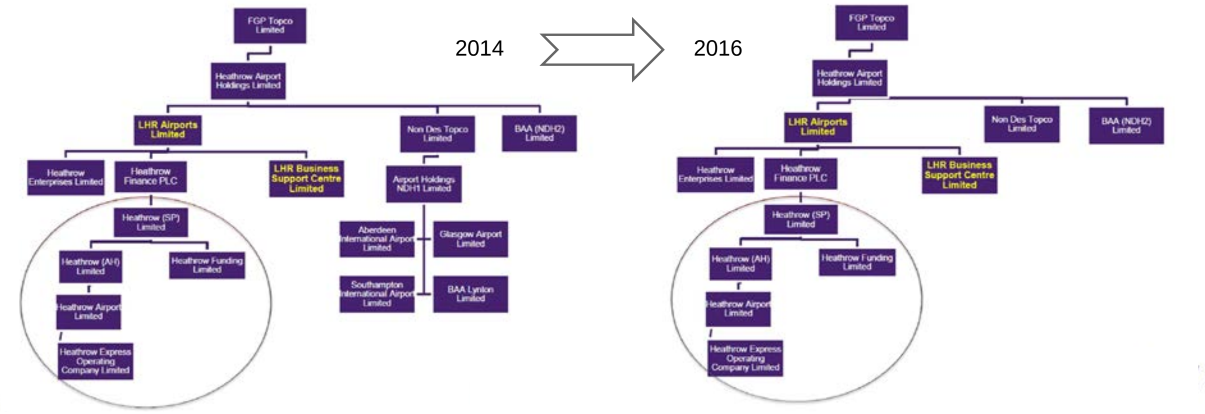
4.7 Related party transactions

4.7.1 Introduction

Company structure

A related party is a person or entity that is related to the entity, in this case Heathrow, which is preparing its financial statements. The Heathrow Group has a complex and dynamic organisational structure as illustrated below.

Figure 22: Evolution of group structure from 2014 to 2016



The ownership of FGP Topco Limited is very broad (Ferrovial S.A. (25.00%), Qatar Investment Authority (20.00%), Caisse de dépôt et placement du Québec (12.62%), the Government of Singapore Investment Corporation (11.20%), Alinda Capital Partners (11.18%), China Investment Corporation (10.00%) and Universities Superannuation Scheme (USS) (10.00%)).

External transactions

Heathrow enters into contracts with related parties, procuring works, goods and services, including capital and operating expenditure, as well as generating revenue through sales. The main companies involved in Heathrow's related party transactions over the past few years are:

- Ferrovial, Ferrovial Servicios, Ferrovial Agroman
- Amey Community Limited, Amey Airport Services Ltd and Amey OWR Ltd (Amey is owned by Ferrovial)
- HETCo (a joint venture between Ferrovial and Laing O'Rourke)
- Harrods International Limited
- Qatar Airways, Qatar Holdings LLC
- AGS Airports (the company established to acquire Southampton, Aberdeen and Glasgow Airports when they divested by Heathrow Airport Holdings Limited. AGS Airports is part-owned by Ferrovial).

Heathrow's policy for such transactions is that all contracts are negotiated on an arm's-length basis. Heathrow is no longer bound by European Union public procurement rules but is still bound by legal and regulatory obligations. Heathrow has a Related Company Procurement Policy to facilitate compliance with these obligations. This policy requires executive approval followed by Board approval for contracts entered into with related parties with value greater than £5 million. As part of this approval process, demonstrable evidence should be presented to shareholders and other interested parties that its procurement achieves value for money and is transparent.

The risks associated with related party transactions are:

- That costs incurred are not efficient meaning that HAL is incurring higher operating and capital costs: the latter would be translated into a higher regulatory asset base. This might also be transferring regulated profit for HAL to non-regulated profit for the related party, which could be generating higher profits than the expected market rate for the works, good or services provided
- That revenues generated from related parties are lower than would be expected at market rates, lowering non-aeronautical revenues generated within the single till.

Intercompany charges

In addition to related party transactions, there are financial exchanges in return for services delivered between the various companies in the Heathrow Group. These are governed by a shared services agreement originally signed in 2008 to govern services provided to the Group Airports. After divestiture of the majority of airports in the Group the only recipients of the services are now:

- Heathrow Airport Limited (HAL)
- Heathrow Express Operating Company Limited (HEX).

The providers of the services are:

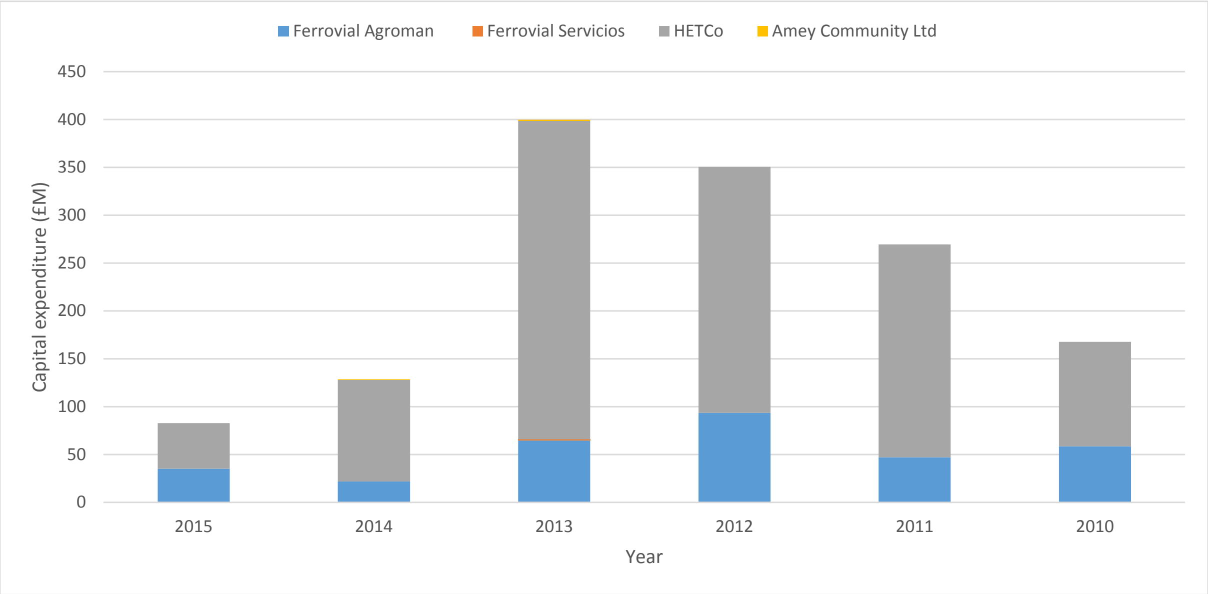
- LHR Business Support Centre (BSC), which provides financial, human resources and general support services. BSC costs are recharged to LHR Airports Ltd at a 7.5% mark-up, allocated according to staff numbers and number of invoices processed, these are then passed onto HAL and HEX along with LHR Airport services, which is also subject to a 7.5% mark-up.
- LHR Airports Limited (LHRA), which until the end of 2015 acted as an agent for HAL with respect to employee costs. This situation changed in 2016 with LHRA now only acting as the principal for the HAL Chief Executive Officer (CEO), non-executive directors and Ferrovial consultancy and advisory services. LHRA costs are recharged to HAL with a 7.5% mark-up.

Similar to related party transactions, intercompany charges might have the effect of raising HAL's opex and transferring regulated profits in HAL to non-regulated profits in LHRA and/or BSC. Unlike related party transactions, intercompany charges only relate to opex.

4.7.2 Related party transactions – capital expenditure

Figure 23 shows the volume of related party transactions concerning capital projects from 2010 to 2015. The figure shows that the largest transactions concern HETCo and Ferrovial Agroman.

Figure 23: Related party transactions from 2010 to 2015, capex



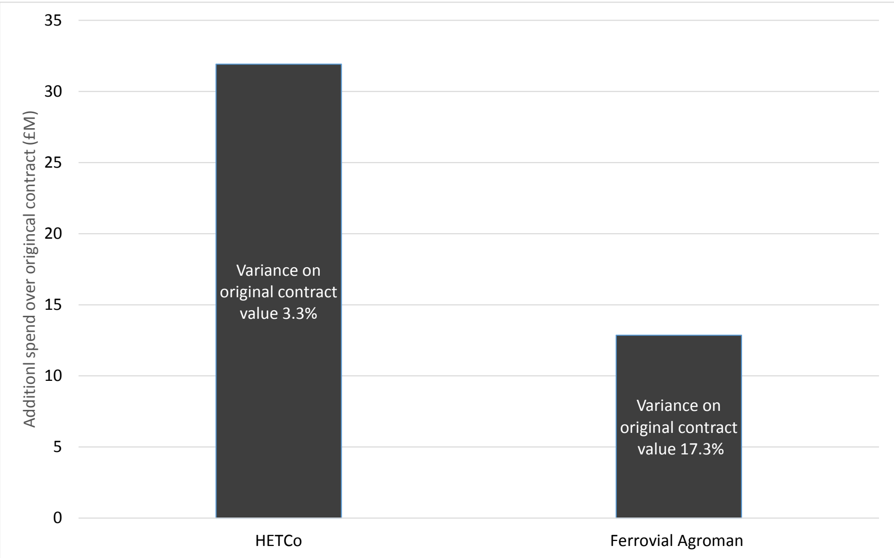
The HETCo transactions are associated with Terminal 2a. The Ferrovial Agroman transactions are associated with a range of activities listed in the capital investment plan. In 2015, these activities were:

- BC024: Commercial advertising and sponsorship
- BC101: Engineering asset replacement
- BC090: Lakeside asset replacement
- BC111: Enabling a new generation of wide-bodied aircraft
- BC066: energy and utilities management
- Q6 Surveys.

In addition to the volume of the transactions, Figure 24 shows the variance (increase) on the original contract price for contracts running in 2015. The figure shows that

- For the HETCo contract, the final contract was extended by approximately £32M over the original contract price, an inflation of 3.3%
- For the basket of Ferrovial Agroman contracts, the variance (increase) on the overall initial contracts was approximately £13M, an inflation of 17.3%.

Figure 24: Variance on capex contract prices for contracts running in 2015



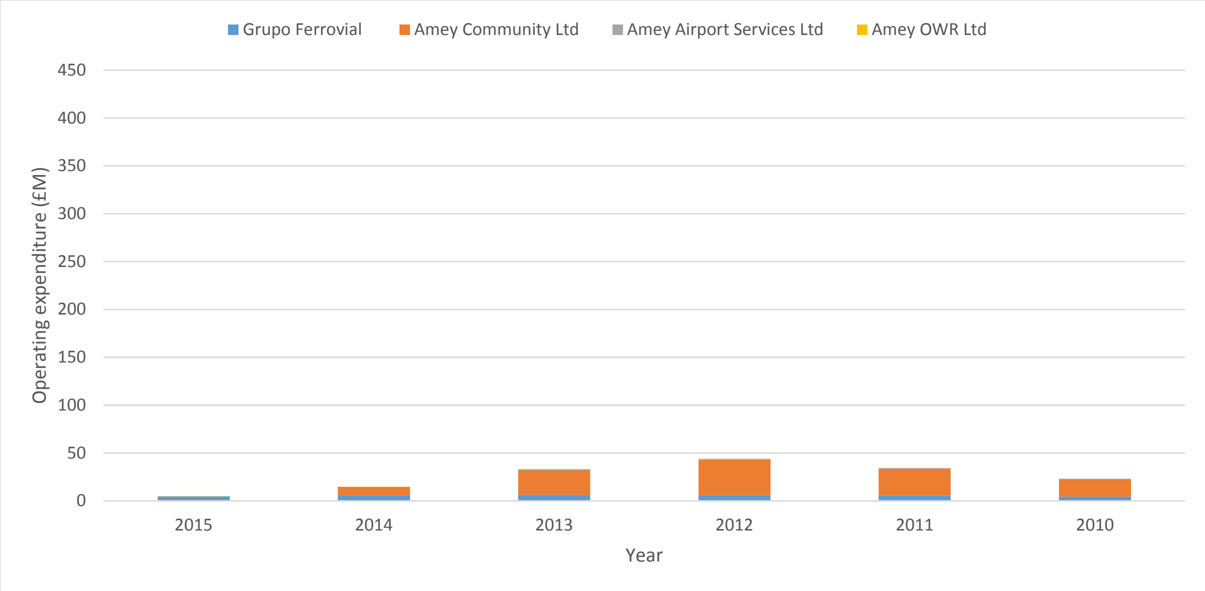
The HETCo contract was authorised through a shareholders resolution and was executed as a target cost contract on 5 March 2010. The contract end date was extended from 30 August 2013 to 19 November 2013 and the contract amended to include a cost reimbursable element associated with the programme change work streams introduced in early 2013. The contract was due to be complete in 2015.

The series of Ferrovial Agroman contracts were also authorised through shareholders resolutions. The majority of these were executed as cost reimbursable contracts.

4.7.3 Related party transactions – operating expenditure

Figure 25 shows the related party transactions classified as opex from 2010 through to 2015. The chart is plotted on the same scale as the equivalent capex chart, Figure 23, to illustrate the difference in magnitude of capex and opex related party transactions; the former being almost an order of magnitude larger.

Figure 25: Related party transactions from 2010 to 2015, opex

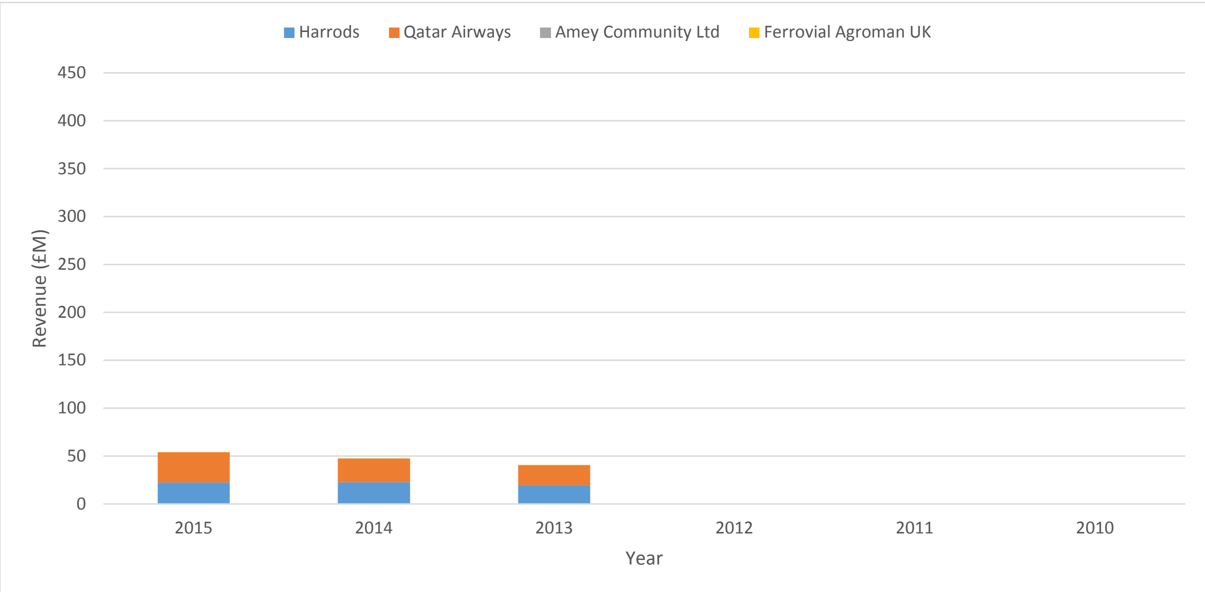


Opex related party transactions have been dominated by Amey Community Ltd for facilities management activities for HAL. These contracts were authorised by shareholders resolution and were mainly of the form of guaranteed maximum prices. It is understood that the contracts were completed in early 2015 and have subsequently been awarded to another service provider.

4.7.4 Related party transactions – revenue

Figure 26 shows the revenue generated by HAL from related party transactions, which only started in 2013. The majority of revenue is generated from Harrods and Qatar Airways.

Figure 26: Related party transactions from 2010 to 2015, revenue



The transactions with Harrods are associated with retail revenue through a concession fee at 26.7% compared to the average of 25%. The transactions with Qatar Airways are associated with the normal fees associated with the airline operating at Heathrow and are stated to be mainly based on pricing outlined in the conditions of use.

4.7.5 Intercompany charges

The conditions under which both LHRA and BSC operate changed between 2014 and 2015 so it is not possible to make a direct time series comparison of these charges without more detailed analysis at management account levels.

Intercompany charges levied by LHRA for 2015 were approximately £21M. This comprises operating costs of approximately £20M with a 7.5% mark-up. The cost base is made up of:

- Approximately £10M for staff costs (CEO, Chairman and non-executive directors)
- Approximately £10Mm other costs, reported as mainly Ferrovial consultancy and advisory services.

Intercompany charges levied by BSC in 2015 were approximately £5.1M made up of £4.7M operating costs and a 7.5% mark-up.

5 EMERGING CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section highlights the general conclusions drawn from the study. It then provides an initial assessment of the potential risks based on the information gathered during the project. Based on the conclusions and risk assessment, the section then makes recommendations for where the CAA may wish to explore further.

5.2 Conclusions

Heathrow has a range of accounting policies covering the main risk areas addressed in this report, notably capitalisation and depreciation. For externally provided works, goods and services, allocation is performed at the first stage of the procure-to-pay process when a requisition is raised. At this point, the general ledger account code, business unit, cost centre, organisation, etc. are specified and entered into the management accounting tool. Other than through the leadership and logistics process, staff costs are allocated ex ante to activities based on an estimate of the proportion of time that they are expected to expend on particular activities. Given this process, there is a risk that allocations may be unreliable.

Heathrow has provided extensive management accounting data, in the form of monthly trial balances at general ledger account level covering the period from January 2009 to December 2016. Heathrow experienced difficulty extracting data for the earlier years and this took longer than anticipated. However although the data is extensive, especially for earlier years, the data fields contained in the trial balances vary, are inconsistent and sometimes missing. It is possible to reconstruct a consistent set of data from the information provided but this is a time consuming activity and it has not been possible to complete it within the timeframe for this project. Heathrow has offered assistance if this is deemed necessary.

The first stage in the validation of the trial balance data was to reconcile with statutory accounts. This was achieved for 2014; the first full data set provided. However, as the baskets of costs reported in statutory accounts vary from year-to-year, this reconciliation has proved difficult for other years. Heathrow provided a key for changes from 2014 to 2015 to facilitate reconciliation but was not able to provide keys for the other years. Reconciliation of accounts for these other years, therefore, requires considerable effort, which has not been possible within the course of this project.

The following section discusses these and other potential risks in more detail.

5.3 Initial risk assessment

5.3.1 Allocation between opex, capex and other revenues

Description of risk

The inaccurate, inconsistent or unreliable allocation of costs to the categories of capex, opex and other revenues.

Assessment

Heathrow has accounting policies that define, in particular, the boundary between opex and capex. However, with the exception of leadership and logistics and other regulated charges, there do not appear to be any formal allocation drivers. Instead, costs are allocated at the start of the procure-to-pay process, or through potentially subjective allocations at the start of each year for staff costs. There must, therefore, be a risk of inconsistency in the allocations between opex and capex and, more generally, on the application of accounting policies. However, more forensic, detailed analysis of management accounting data is required to determine the extent to which this risk is realised. This should involve:

- Assessment of data at purchase order level to determine how consistently allocations are applied
- Assessment of the allocation of staff costs to capital projects at the beginning of each year to assess reasonableness and consistency.

Relating to staff costs, the data indicates a large step-up in the capitalisation of staff costs between 2012 and 2013 possibly indicating a change in policy. There was also a change in the approach to allocation of central costs to capital projects, through the leadership and logistics cost centre in 2014. More detailed investigation of staff costs and the causes of the large increase in capitalisation from 2012 to 2013 is required.

Heathrow Comment:

The report already recognises the reason for this variation. "It is understood that this is due to an organisational change bringing staff from LHR Airports into Heathrow Airport Limited. These staff do not appear in the figures above prior to 2013 but do feature in the years 2013 to 2015. The treatment of these costs with regards to capitalisation appears to have been consistent throughout, and it is the *insourcing* to HAL that creates the step-change seen above, as opposed to any change in policy."

Where allocation drivers are applied in the case of other regulated charges and more recently to the leadership and logistics cost centre, the drivers appear to be based on judgement. Although these drivers are transparent and agreed with stakeholders, they should be investigated further to understand their impact and whether any alternative, deterministic drivers would be more suitable and/or cause any significant change in outcomes.

5.3.2 Allocation at either side of price control period boundaries

Description of risk

The price cap is set on a cyclical basis, usually at five year intervals. The CAA uses information provided by the Airport to set the price cap.

Assessment

As indicated above, there was a large step change in capitalisation of staff costs between 2012 and 2013, after the preparatory work for Q6 had been completed. Capitalisation of staff costs is noted and excluded from employment costs in statutory accounts but is not excluded from staff costs in regulatory accounts. For example, for 2015 staff costs are reported as a £423M operating cost in the regulatory accounts and as a £384M operating cost in the statutory accounts with £38M capitalised staff costs highlighted in the notes to the financial statement. It is not clear how this change in capitalisation might impact on the regulatory settlement.

The evolution of opex over the price control boundary is inconclusive. There is a possibility that there is a step downwards after the end of the assessment leading up to the Q6 determination, potentially due to the increase in capitalisation. This potential decrease is overlaid on a general downward trend.

5.3.3 Allocation to and from related parties

Description of risk

Heathrow's accounts show a number of related party transactions for the accounts starting in 2012 through to the latest accounts for 2015. Related party transaction could potentially be used to transfer costs and/or revenues outside of the regulatory framework to the benefit of Heathrow and/or the related party.

Assessment

Heathrow has policies and procedures for governing and reporting on related party transactions. The level of transactions, particularly capex related, was high from 2011 to 2014 but is now tailing off and is low for opex related activities. With the information provided it has not been possible to assess the degree to which the related party transactions are in-line with what might be expected from market conditions in terms of price and profitability for works, goods or services delivered by a related party or the cost to the related party when receiving goods or services from Heathrow.

The size of the related party transactions has been substantial at order of £400M per year for capital projects and order £50M per year for service contracts. These payments are collated and reported to Heathrow’s audit committee on a quarterly basis as well as being subject to external audited. However even small inefficiencies in these transactions would result in potentially large increases in cost. It is important therefore to assess and understand whether the risks associated with related party transactions have been realised.

Further evidence on the risks associated with related party transactions could be gathered from:

- An understanding of the process used to procure works, goods and services delivered by related parties, particularly HETCo and Ferrovial Agroman for capex related activities and Amey Community Ltd for opex related activities. This will raise confidence that: (i) Heathrow’s governance processes have been applied to related party transactions; and (ii) market conditions have been applied to the award of contracts and that value for money is being delivered
- The terms of the contracts used to manage the delivery of works, goods and services and comparison of these with similar contracts used for similar activities undertaken by non-related parties. This will raise confidence that the same project controls are being applied to related party and non-related party transactions
- Benchmarking of the prices paid for the works, goods and services delivered by related party transactions with prices paid for similar works, goods or services by non-related parties to give confidence that the related party transactions are operating under market conditions.

Intercompany charges levied by LHRA and BSC are at cost with a 7.5% mark-up. As the conditions for shared services have changed with the divestiture of the other Group airports, both of these companies now only provide services to Heathrow Airport and Heathrow Express, under the Heathrow (SP) Ltd umbrella, bringing these services in-house would effectively save the 7.5% mark-up. The impact of the risk here is approximately £2M per annum.

5.3.4 Gaming at financial year end

Similar to the risk at the boundary between price control periods, costs, revenues and allocation methods could be gamed by using accruals or pre-paying beyond normal practices; changing allocation mechanisms across the financial year boundary bringing forward capex to inflate the RAB as quickly as possible.

The data shows no evidence of any unusual behaviours at financial year end for opex. It has not been possible to assess the risk associated with capex during the timeframe of the project.

5.3.5 Allowable security costs

If cost increases or decreases that result from changes to security standards exceed a cumulative deadband figure of £19M, they are passed through to the average revenue yield per passenger as described in the price control conditions[2].

It has not been possible to assess this risk during the timescales of the project. Assessment of this risk would require specific data on security operations and on changes to security standards.

5.3.6 Allocation between core and development capex

Heathrow's licence draws a distinction between core and development capex. Capex projects transition from development to core on passing Gateway 3 (the critical investment decision) and are treated differently in the calculation of the price cap. This difference means that allocation of costs to development and core capex projects may have a difference on airport charges and that the time that the project passes Gateway 3 could also impact airports charges.

5.3.7 Charges for other regulated services

As part of the licence condition, Heathrow has to report annually on the cost allocation method used for other regulated services, the pricing principles that are applied and actual costs and revenues generated. This process is overseen by the ORCGG, is transparent, and is accepted by the stakeholders.

The drivers used to allocate external costs to the other regulated services are fixed percentages of the overall cost associated with each activity. Although they are accepted, there is a risk that these fixed percentages are not representative of the external resources consumed by each activity. A more deterministic or activity based costing could be explored to determine whether the current allocation approach for other regulated services is appropriate or should be improved.

5.4 Recommendations

The first set of recommendations are focused on validating the extensive management accounting data provided by Heathrow and then using this data to assess some of the risks that it has not been possible to investigate in stage 1, as well as confirming the initial risk assessment performed in this study. The second set of recommendations are focused on investigating and understanding some risks in more detail.

5.4.1 Validating and extending current analysis

1. The trial balances provided by Heathrow should be cleansed and made consistent in terms of key data fields This will require cross-reference between the trial balances for each year with mappings between the data fields from years with complete data sets being used to fill data gaps for other years
2. The cleansed trial balances should be used to reconcile to statutory accounts. As no keys exist to map trial balance accounts onto statutory account line items, this will likely require considerable effort on a trial and error basis. Once the reconciliation is complete though:
    a. The data and results of analysis can be treated with much higher levels of confidence
    b. Differences in practices from year-to-year will be more apparent.
3. The quantitative analysis reported in section 4 should be validated and extended to include an assessment of capex. Deeper dives could be made to understand:
    a. How revenues are broken down, allocated, and vary

[2] Licence granted to Heathrow Airport Limited by the Civil Aviation Authority under section 15 of the Civil Aviation Act 2012 on 13 February 2014. Consolidated version of 19 July 2016, section C1.4

b. The impact of the use of the leadership and logistics cost centre, introduced in 2014 to allocate on-costs, and any changes resulting from this approach. This could also review the impacts of using alternative drivers to allocate leadership and logistics costs.

4. A more detailed assessment of other regulated charges should be made. This could form the basis of an assessment of the differences arising from applying more deterministic cost drivers than the general ones currently used.

5.4.2 Additional detailed analyses

1. More detailed data at purchase order level, for example available from a SpendCube type system, if this is available, would enable systematic checks on the consistency of allocation of costs to opex and capex to be made and would allow detailed investigation/consistency checking at price control and year-end boundaries. Prior to planning such an analysis, confirmation would need to be made with Heathrow that data at this granularity is readily available

2. Related party transactions should be investigated in more detail to ensure that Heathrow is complying with its policies and to ensure that procurement from and sales to related parties are done on an efficient basis in a market environment.

A DATA REQUESTS

A.1 Introduction

The project has necessarily relied on extensive quantitative and qualitative information from Heathrow. The information covered ranges from data at general ledger level through to high level policies and executive level financial reports. To keep track of data requests and exchange both PA and Heathrow created data catalogues. Data was exchange using a secure Sharepoint site.

This section highlights the data requested, summarises the data provided and lists gaps that it was not possible to fill within the timeframe of stage 1 of the project.

A.2 Data requested

The following table summarise the data requested from Heathrow cross referencing PA's data requests to Heathrow's document references.

Table 2: Summary of data requested

Category	Item No.	Description	Heathrow reference
1. Structure of System	1.1	Mapping of Oracle Account Codes	H7-CR-008 to H7-CR-013
	1.2	Standard Journal Template and manual	H7-CR-034 and H7-CR-035
2. Accounting Data	2	Oracle trial balances with added string combinations for 2008 to 2016	H7-CR-071
3. Annual Accounts 2006 - 2015	3.1	Statutory Accounts	H7-CR-022
	3.2	Regulatory Accounts	H7-CR-022 to H7-CR-032
	3.3	Audit trail linking 2 to 3.1 and 3.2 (reconciliations)	H7-CR-057 and H7-CR-059
4. Standard Reports	4.1	List of standard monthly reports	
	4.2	Examples of standard monthly reports	H7-CR-017 to H7-CR-020
5. Capitalisation Process	5.1.1	Capitalisation policy - labour costs	H7-CR-007
	5.1.2	Capitalisation policy - external services	H7-CR-007
	5.2	Description of procedure for reallocation of OPEX to CAPEX	H7-CR-040
	5.3	Changes to capitalisation process	H7-CR-007 + H7-CR-041
	5.4	Accounting for maintenance cost/spares and renewals	
	5.5	Minutes from FASG meetings (and equivalent before formation)	H7-CR-043
	5.6	Labour capitalisation rates	H7-CR-040
	5.7.1	Quantification of capitalised internal labour	H7-CR-040
	5.7.2	Quantification of capitalised external services	H7-CR-040
	5.8	Maintenance costs and CAPEX by asset type	H7-CR-042
6. OPEX	6.1	OPEX hierarchy	H7-CR-036
	6.2	OPEX costs by category	H7-CR-036
7. CAPEX	7.1	List of capital programmes and projects	H7-CR-039
	7.2	Expenditure by capital projects	H7-CR-039
8. Revenue	8.1.1	Definition and list of sub-streams - Aeronautical revenue	H7-CR-021
	8.1.2	Definition and list of sub-streams - Commercial revenue	H7-CR-021
	8.1.3	Definition and list of sub-streams - Other regulated charges revenue	H7-CR-021
	8.2	Gross revenue by revenue sub-stream	H7-CR-021
	8.3	List of revenue streams outside the single till	H7-CR-044
9. Adjustments	9.1	Process for under- or over-recovery of other regulated charges	H7-CR-044
	9.2	Adjustments to other regulated charges	H7-CR-044
	9.3	Adjustments to security charges	H7-CR-044
10. Related Party Transactions	10.1	List of related parties	
	10.2	Quarterly reports of related party transactions	
	10.3	Related party transactions	
	10.4	Gross Profits of Related party transactions	

Data was also received in relation to items 10.1, 10.2 and 10.3 above, however this did not arrive in time for it to be analyses during the course of this project.

A.3 Data provided

Table 3: Catalogue of data provided

Heathrow reference	Description	Data request reference	Data request category
H7-CR-001	Kick off meeting Heathrow Group Structure		
H7-CR-002	Kick off presentation- HAL Finance Structure		
H7-CR-003	Chart of Accounts Structure		
H7-CR-004	Airport Charges Decision 2015		
H7-CR-005	Transparency and Trading Statements		
H7-CR-006	Depreciation and Revaluation Policy Dec 2014		
H7-CR-007	Capitalisation Policy	5.1 + 5.3	Capitalisation Process
H7-CR-008	Oracle Legal Entities	1.1	Account Structure
H7-CR-009	Oracle to SAP-BPC Account code mappings	1.1	Account Structure
H7-CR-010	Oracle Business Units	1.1	Account Structure
H7-CR-011	Oracle Cost Centres	1.1	Account Structure
H7-CR-012	Oracle Account Codes	1.1	Account Structure
H7-CR-013	Oracle ICO Partners	1.1	Account Structure
H7-CR-014	Permanent Journal Template	1.2	Account Structure
H7-CR-015	Reversing Journal Template	1.2	Account Structure
H7-CR-016	Intercompany Journal Template	1.2	Account Structure
H7-CR-017	CFO Board Report- Sep 2016	4.2	Standard Reports
H7-CR-018	Monthly Performance Report - Sep 2016	4.2	Standard Reports
H7-CR-019	Monthly Performance Report - Sep 2017	4.2	Standard Reports
H7-CR-020	KPI Graphs- Sep 2016		
H7-CR-021	Breakdown of 2015 commercial revenues	8.1 + 8.2	Revenue
H7-CR-022	Heathrow Reg Accounts March 2006	2.3	Annual Accounts
H7-CR-023	Heathrow Reg Accounts March 2007	2.3	Annual Accounts
H7-CR-024	Heathrow Reg Accounts March 2008	2.3	Annual Accounts
H7-CR-025	Heathrow Reg Accounts March 2009	2.3	Annual Accounts
H7-CR-026	Heathrow Reg Accounts March 2010	2.3	Annual Accounts
H7-CR-027	Heathrow Reg Accounts March 2011	2.3	Annual Accounts
H7-CR-028	Heathrow Reg Accounts March 2012	2.3	Annual Accounts
H7-CR-029	Heathrow Reg Accounts March 2013	2.3	Annual Accounts
H7-CR-030	Heathrow Reg Accounts March 2014	2.3	Annual Accounts
H7-CR-031	Heathrow Reg Accounts March 2015	2.3	Annual Accounts
H7-CR-032	Heathrow Reg Accounts March 2016	2.3	Annual Accounts
H7-CR-033	Trial Balances and Statutory Accounts	2 + 3.1	Accounting Data + Annual Accounts
H7-CR-034	Journal use bets practice	1.2	Structure of System
H7-CR-035	How to submit correctly formatted journal	1.2	Structure of System
H7-CR-036	P+L Hierarchies	6.1 - 6.2	OPEX Hierarchy and
H7-CR-037	2015 Trial Balances with string combinations	2	Management accounts
H7-CR-038	Query about Journal Entry	1.2	Structure of System
H7-CR-039	List of capital programmes and projects	7.1	CAPEX
H7-CR-039	Expenditure by capital project	7.2	CAPEX
H7-CR-040	Procedure for reallocation of OPEX to CAPEX	5.2	Capitalisation Process
H7-CR-040	Quantification of capitalised internal labour	5.7.1	Capitalisation Process
H7-CR-040	Quantification of capitalised external services	5.7.2	Capitalisation Process
H7-CR-041	Changes to capitalisation process	5.3	Capitalisation Process
H7-CR-043	Minutes from FASG meetings	5.5	Capitalisation Process
H7-CR-044	List of revenue streams outside the single till	8.3	Revenue
H7-CR-044	Adjustments to other regulated charges	9.2	Adjustments
H7-CR-044	Adjustments to security charges	9.3	Adjustments
H7-CR-044	Process for under- or over-recovery of other regulated charges	9.1	Adjustments
H7-CR-045	Response to query on org code structure	2	Annual Accounts
H7-CR-046	List of org codes against descriptions	2	Annual Accounts
H7-CR-047	Leadership Logistics Table	5	Capitalisation Process
H7-CR-048	Related Party Accounts data 2012 - 2015	10	Related Party Transactions
H7-CR-049	Related Party Accounts data 2012 - 2015	10	Related Party Transactions
H7-CR-050	Related Party Accounts data 2012 - 2015	10	Related Party Transactions
H7-CR-051	Related Party Accounts data 2012 - 2015	10	Related Party Transactions
H7-CR-052	Related Party Accounts data 2012 - 2015	10	Related Party Transactions
H7-CR-053	Description of breakdown of cost categories	3.3	Reconciliation of BPC accounts to Stat Accounts
H7-CR-054	Breakdown of cost categories by account code 2015	3.3	Reconciliation of BPC accounts to Stat Accounts
H7-CR-055	List of account codes within BPC categories, with changes between years for 2015-16	3.3	Reconciliation of BPC accounts to Stat Accounts
H7-CR-056	2014 trial balances	2	Management accounts
H7-CR-057	Rec BPC to Stat accounts (not useful)	3.3	Reconciliation of BPC accounts to Stat Accounts
H7-CR-058	2016 PL by CC	2	Management accounts
H7-CR-059	Revenue mapping to Stat Accounts	3.3	Reconciliation of BPC accounts to Stat Accounts
H7-CR-060	Further related party transaction requests	10	Related Party Transactions
H7-CR-061	Reconciliation from Stat to Reg accounts	3.3	Rec from Stat to Reg accounts
H7-CR-062	2013 trial balances	2	Management accounts
H7-CR-063	2012 trial balances	2	Management accounts
H7-CR-064	Updated 2013, 2015, 2016 trial balances	2	Management accounts
H7-CR-065	Revised 2014 trial balances	2	Management accounts
H7-CR-066	2010 trial balances	2	Management accounts
H7-CR-067	Revised 2012 trial balances	2	Management accounts
H7-CR-068	2011 trial balances	2	Management accounts
H7-CR-069	2016, 2009 trial balances	2	Management accounts
H7-CR-070	2008 trial balances	2	Management accounts

A.4 Data gaps

Heathrow provided management accounting data at general ledger level through trial balances extracted from the Oracle system. Data was provided for each general ledger account on a cumulative monthly basis from January 2009 through to December 2016 inclusive. Data from recent years – 2014, 2015 and 2016 – was relatively easy to extract and the fields provided were relatively consistent. However, previous years' data proved problematic to download and the fields provided are not always complete nor consistent. In general but not always, it is possible to reconstruct a comprehensive and consistent data set by creating maps that relate account codes, account parents, cost centres, business units, etc. from the more complete data from the later years. It has not been possible to do this within the timescales of the project. In addition, Heathrow has not been able to provide a comprehensive set of mappings of account codes from the trial balances to the cost and revenue categories reported in the statutory accounts. The allocations of costs into the categories reported in the statutory accounts change from year-to-year so it has not been possible to reconcile management and statutory accounts over all of the years of interest. The authors of this report note that Heathrow has offered assistance in closing these data gaps should it be required.

Heathrow has provided quantitative data on related party transactions as well as the policies used to manage those transactions. However, there is insufficient data to enable an assessment of whether the related party transactions are in-line with what might be expected from the market.

B MAPPING TRANSACTIONS TO ACCOUNTS AND BUSINESS UNITS

The following figures show, as heat maps, the level of transaction by business unit and account parent (grouping of account codes) from 2009 through to 2016.

Figure 27: Volume of transactions by business unit and account, 2016

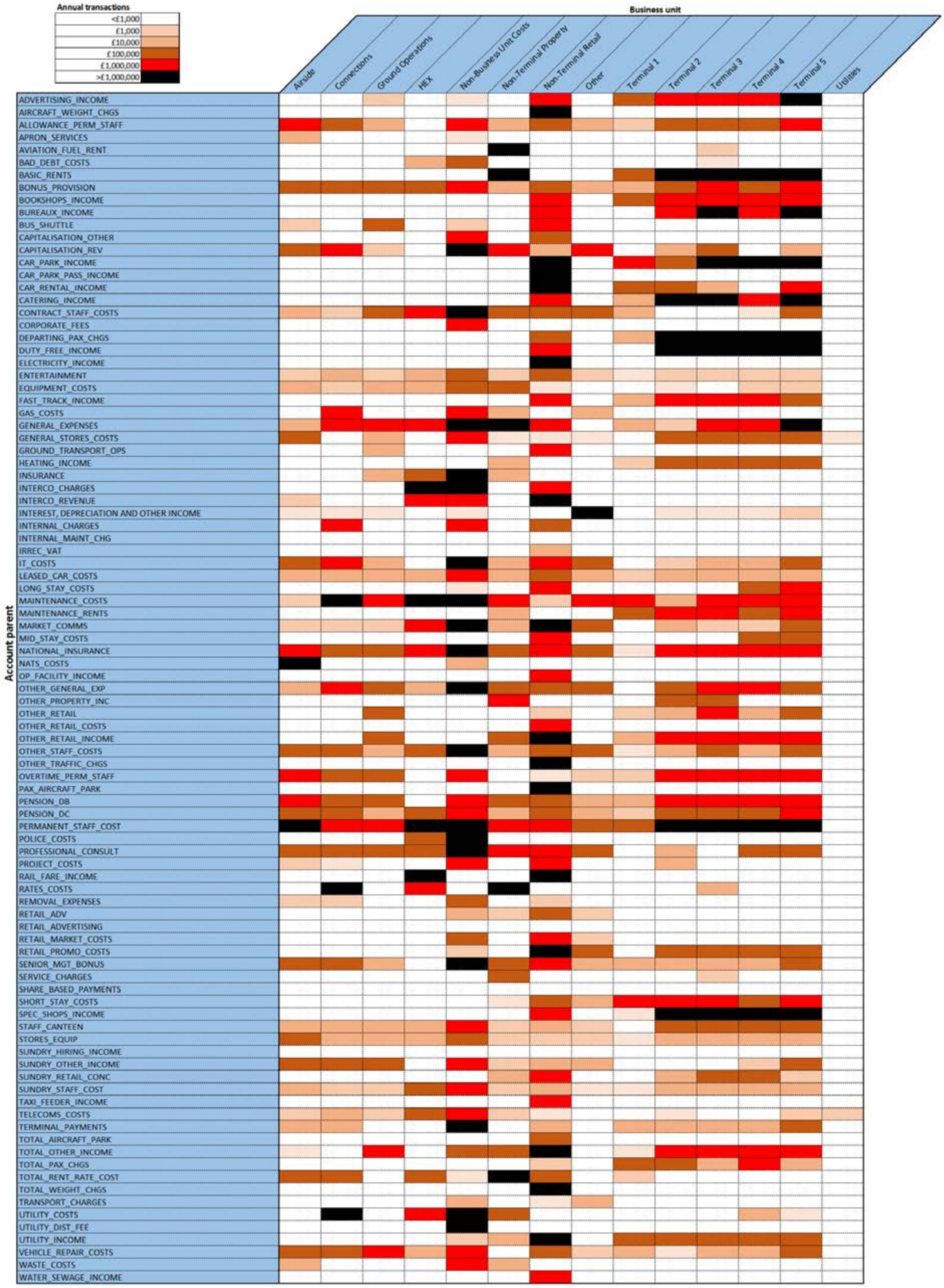


Figure 28: Volume of transactions by business unit and account, 2015

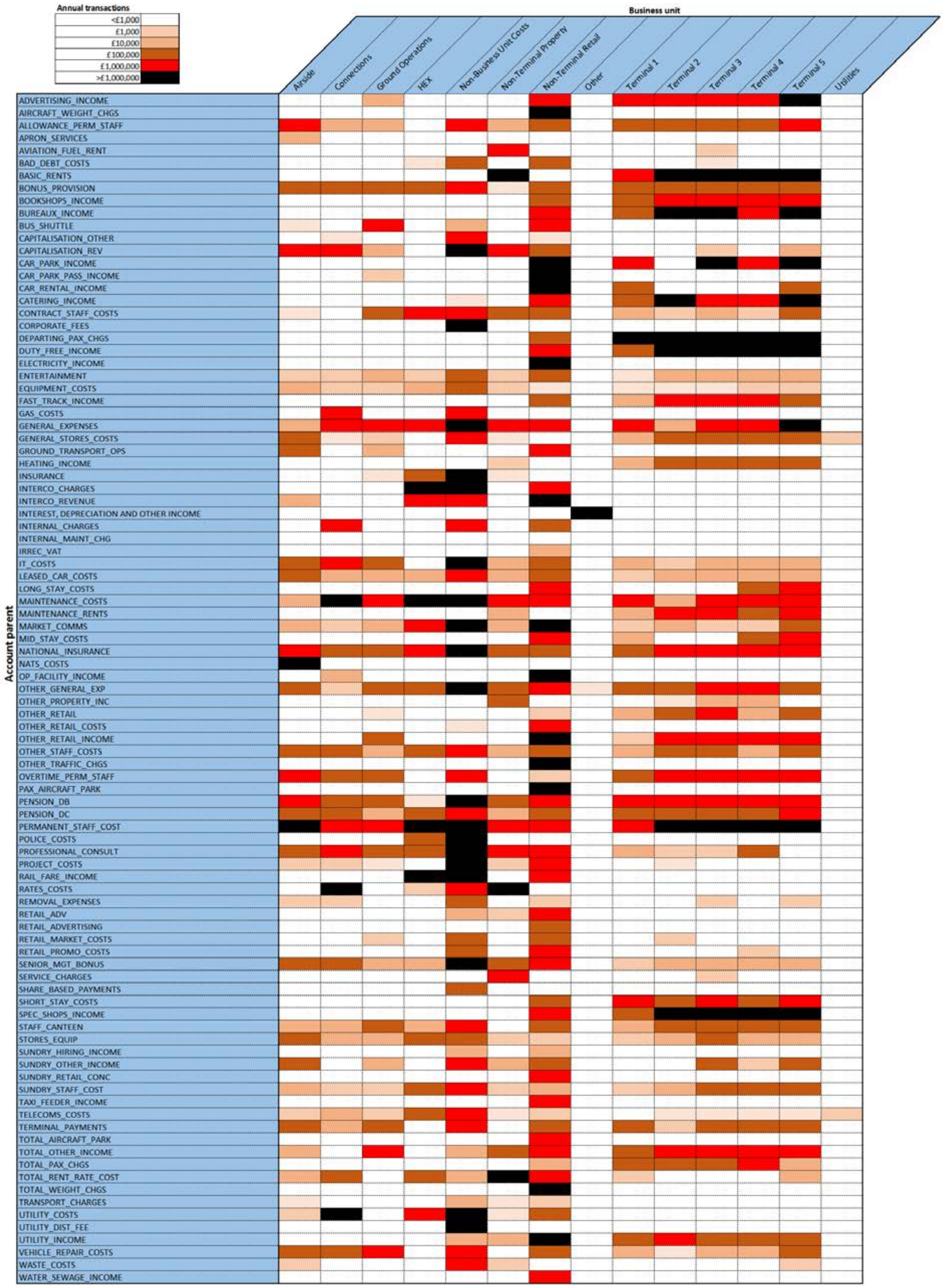


Figure 29: Volume of transactions by business unit and account, 2014

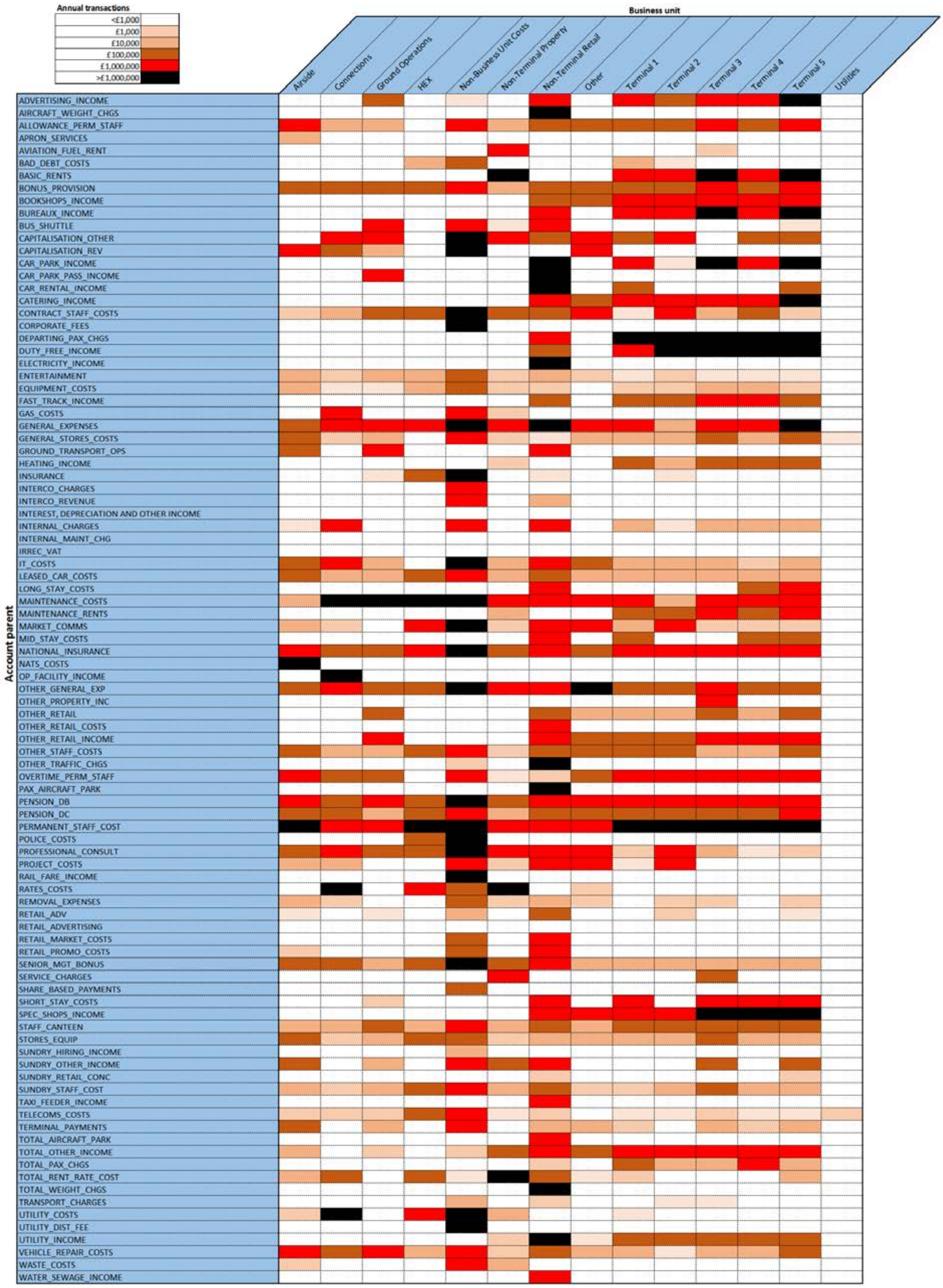


Figure 30: Volume of transactions by business unit and account, 2013

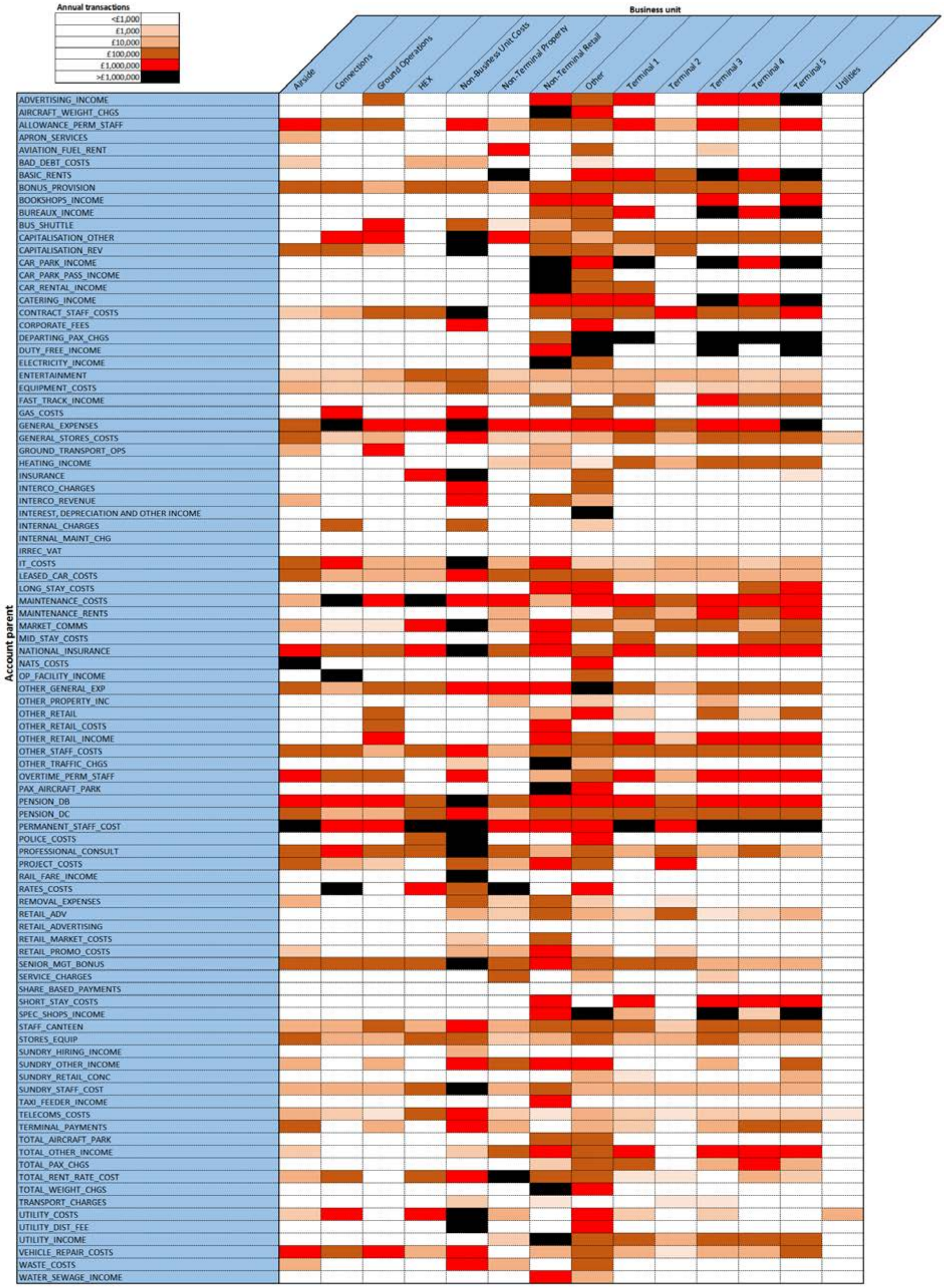


Figure 31: Volume of transactions by business unit and account, 2012

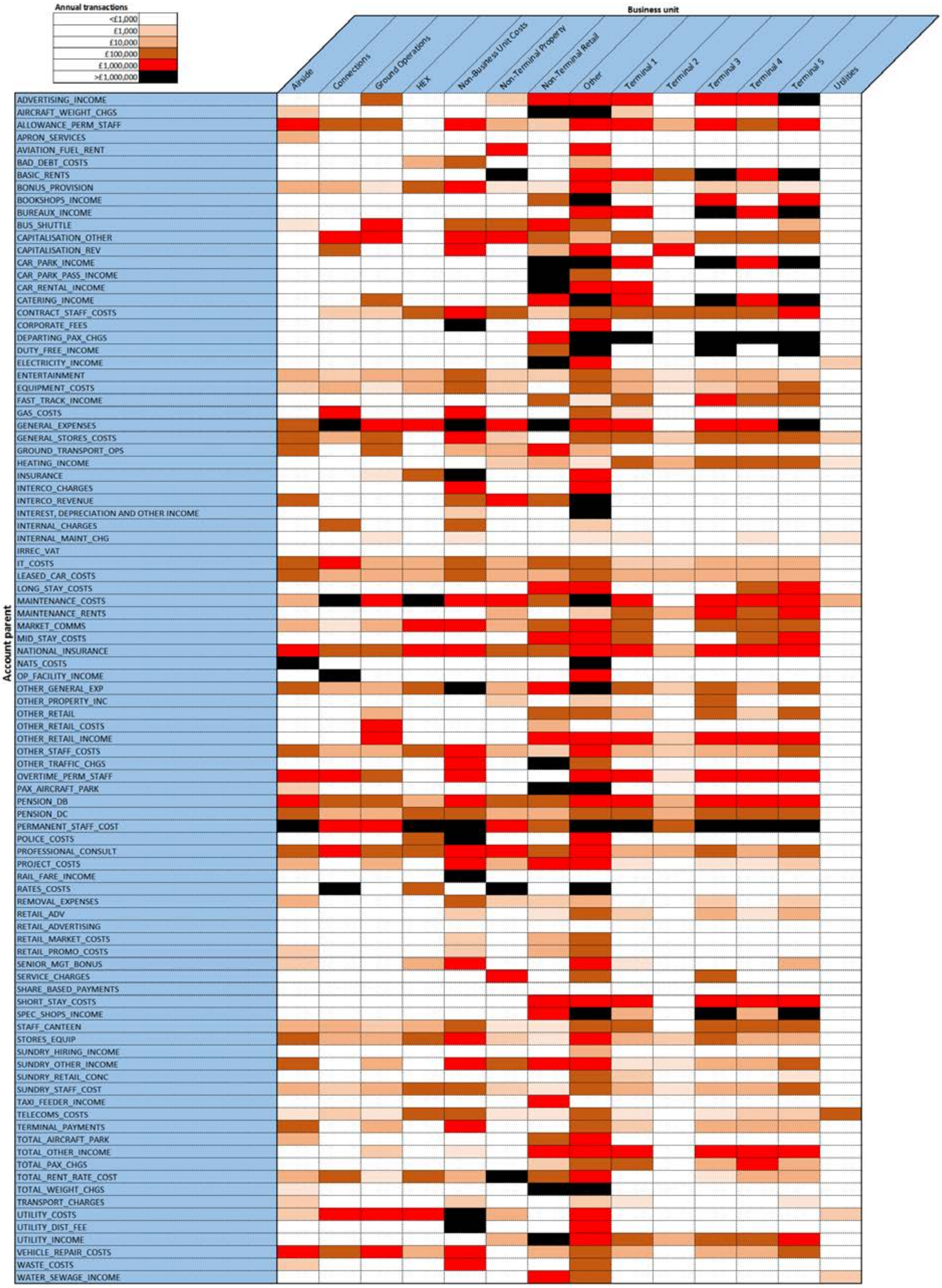


Figure 32: Volume of transactions by business unit and account, 2011

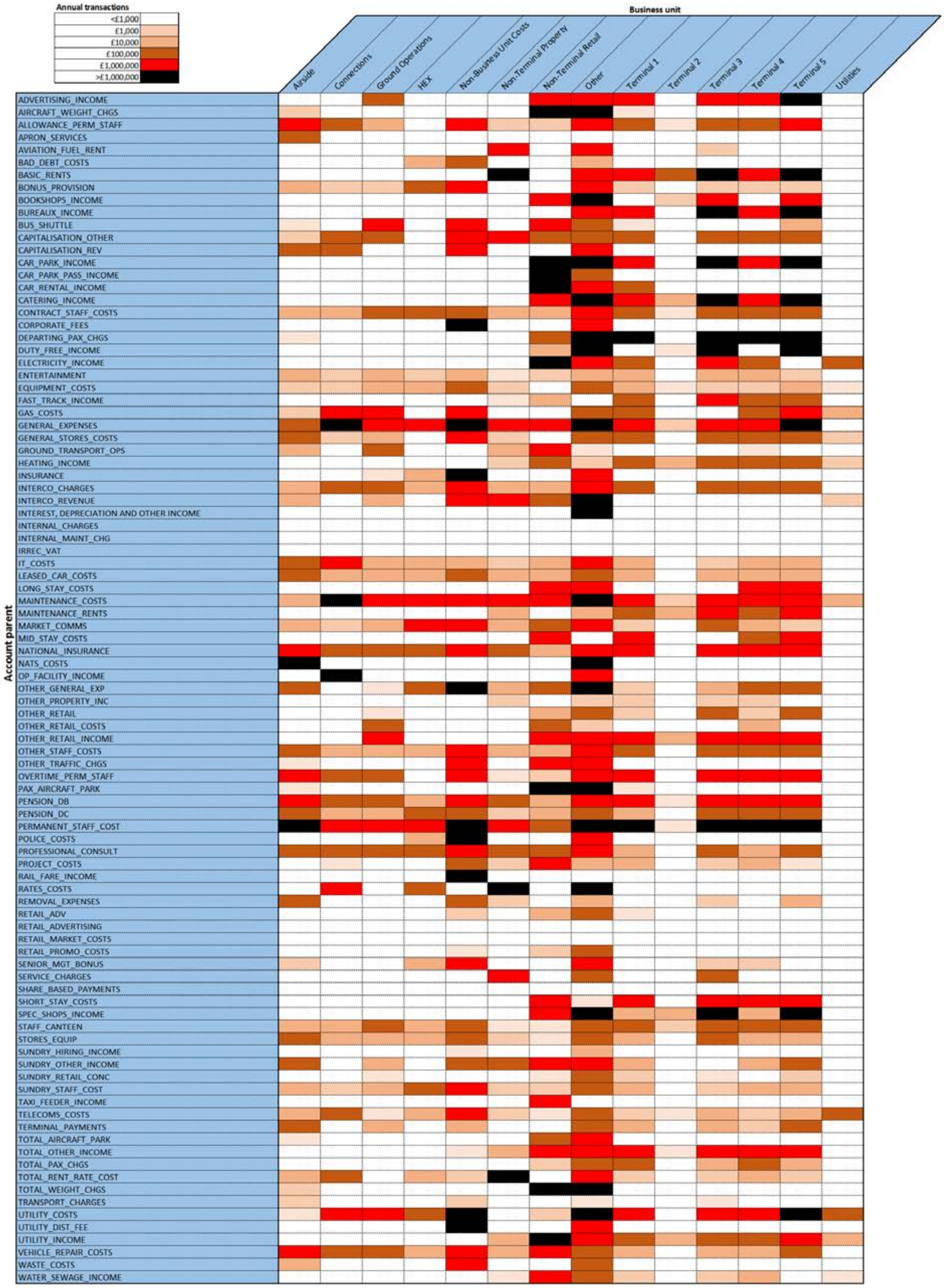
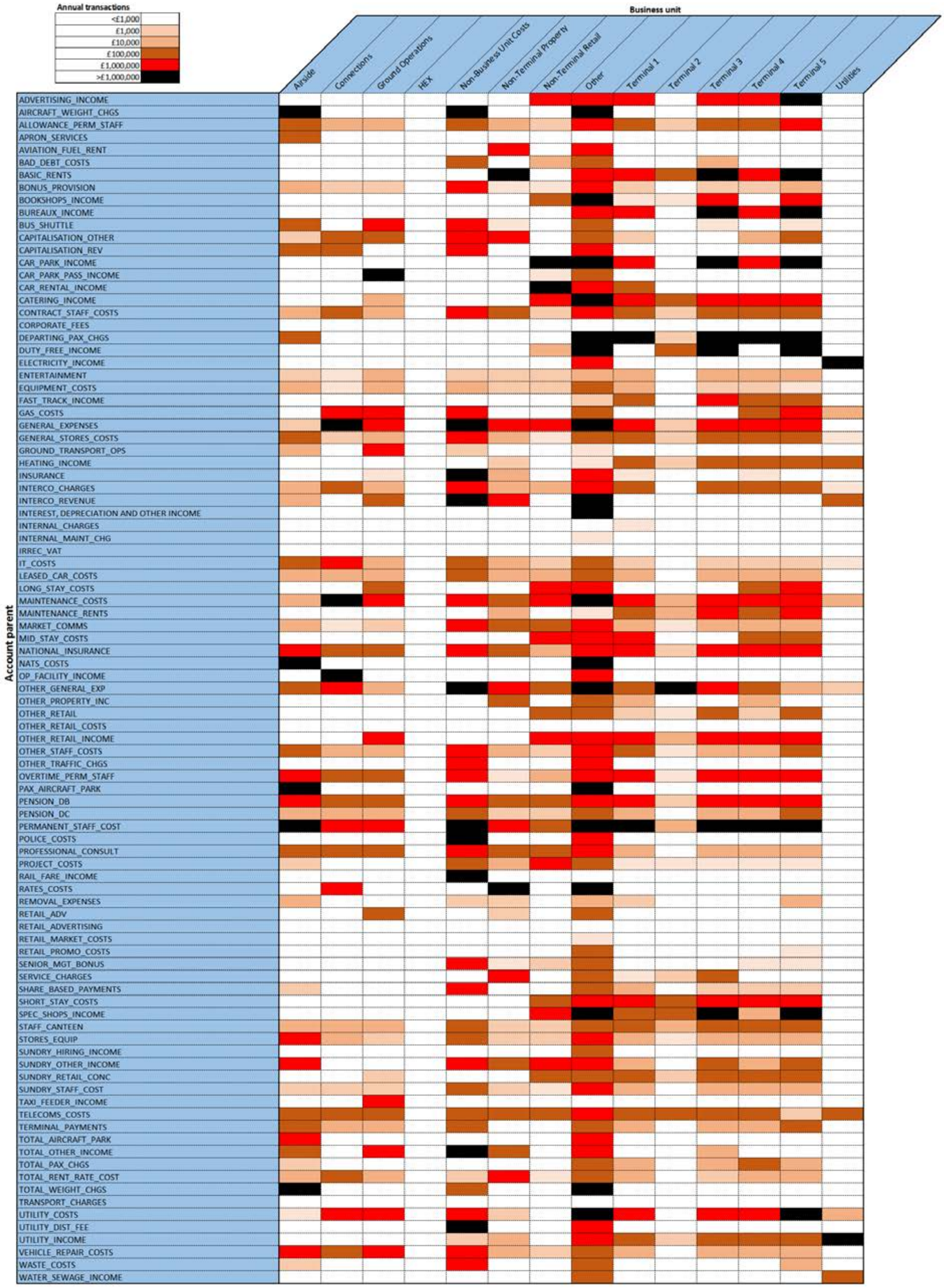


Figure 33: Volume of transactions by business unit and account, 2010



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