Recommendations for a reasonable Call Handling Fee (CHF) associated with the Emergency Call Answering Services (ECAS)

Final report

ComReg

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Summary

0 Executive summary

In 2008, BT was selected as the Emergency Call Answering Service ("ECAS") provider in Ireland for a period of 5 years. BT started to provide ECAS in July 2010. In order to recover the cost of running the ECAS operation, BT Ireland charges a Call Handling Fee ("CHF") to operators for calls which originate on their networks. Section 58D of the 2007 Act requires ComReg to review the maximum emergency CHF and to ensure that the CHF enables BT to recover its reasonable costs. In 2010, ComReg reviewed the CHF and it is now at €3.35 per call. Based on the review of costs incurred in the first year of operation and on BT's forecasts, the CHF may be adjusted with the adjustment taking effect on 12 February 2012.

BT took its first live call in mid July 2010 and proceeding number of weeks the traffic transitioned from the previous ECAS provider (eircom) to the new BT ECAS platform. Following the pilot phase the system was duly deemed fully commissioned in late October 2010. Given the nature of the service and the highly complex migration, it is expected that the service would require some changes to it as it bedded in. This is quite normal for an operation of this scale and size and it is therefore appropriate that a review of the "in-life" operations is concluded at this time, some twelve months after the ECAS has been fully commissioned and in line with the appropriate legislation.

This review has been conducted with the requirement to assess what costs have been incurred and if they are deemed to be reasonable. In so doing, TERA Consultants has identified that BT has undertaken a rationalisation programme of its own whereby several previously required managerial and support functions have been scaled back. Given the very steep learning curve at the outset, this would have been expected as proficiencies and key learnings became "business as usual". TERA Consultants has conducted an operational review to establish if the associated costs are reasonable and has found that a lot of the processes and procedures adhere to normal activities and in some cases could be seen as "best in class". Given the nature of the service, this is a very positive situation and requires to be so duly noted.

In order to verify that BT's ECAS costs are reasonable and to determine the level of the CHF that will take effect on 12 February 2012, it is necessary to deeply understand the types of costs incurred by BT for the provision of ECAS, to compare them with available best practices and to assess how they are going to evolve. BT's ECAS costs are made of:

- Operator costs. BT pays a fixed charge per hour worked by operators to its sub-contractor,
- BT pay costs for management,
- BT non pay costs (accommodation costs, facilities management, maintenance of fixed assets, network services, etc.),
- Depreciation charges for fixed assets and set-up costs. These have been reviewed last year by ComReg[1]. This report does not therefore focus on these costs.
- Financial costs (Guaranteed Rate of Return, Section 58D fund and past under recovered costs).

A detailed review of these elements enabled to find out that some cost elements would decrease in the future and that some costs are unreasonable and should not be recovered by the CHF:

- Regarding operator costs, they should be significantly lower than those forecasted by BT due to the following:
    - The cost per hour paid by BT to its operator sub-contractor is not reasonable. A reasonable rate is somewhat lower than the hourly rate paid by BT.
    - The number of hours requested by BT for ECAS is too high. An independent capacity planning model was developed in order to examine parameter changes and scenario variations. Some observations were made on BT's demand forecasting, BT's schedule production and mainly on BT's capacity planning which showed that the number of operator hours requested by BT are around 10% higher than what has been contractually agreed to meet the required service levels, including some additional margin. TERA Consultants is of the view that the future number of hours requested by BT to its sub-contractor should be more in line with the assessment made in this report and proposes to use for the forecasts an average of the number of hours that would have been calculated by BT and of the number of hours calculated in this report.
- Regarding BT pay costs, BT plans that its direct labour costs are going to decrease with the phase out of some roles this year. Also, some direct support costs should be disallowed for the calculation of the CHF

[1] HBC Final Report to ComReg re ECAS fee review 17 December 2010

- because they are not necessary for the provision of ECAS. Some of the disallowed costs relate to a recent court action taken by another telecommunications provider against ComReg to which BT became a Notice Party. Finally, a part other support function costs appear to be only relevant for set up phase and should therefore not be included in the CHF for future years.
- Some BT pay non costs are unreasonable such as some premises related costs and lease interest.

The calculation of the CHF based on these cost elements requires assumptions on the volumes of calls handled by ECAS. In 2010 and 2011, the volumes of calls have significantly decreased. In its document N°11/65[2], ComReg informed the industry that the number of emergency calls handled by the ECAS operator had decreased by around 17% between the first six months of 2010 and the six first months of 2011. However, a precise analysis of the very last trends shows that this decrease has slowed, especially because of the recent stability in volume of "ghost calls" originating from Eircom. However, as eircom is continuously monitoring and repairing line faults which create the "ghost calls" (particularly during spells of bad weather), the precise forecasting of emergency call volumes is very difficult to execute. As a result, it is preferable to use conservative assumptions for the calculation of the CHF, i.e. low volumes of calls. Indeed, as the volume of calls has a significant impact in the level of the CHF, it is preferable to make sure that, in case volumes of calls were to further decrease significantly in the future, no significant increase in the CHF would be necessary. On the contrary, if volumes of calls were to increase, then the calculated CHF would need to decrease in the future years. In this context it was assumed in this report that the annual evolution for the ECAS service demand would be –a 3.5% decrease.

In order to make sure that BT is exactly recovering its reasonable costs incurred for the provision of ECAS over the contract period, the discounted sum of under and over recoveries of each quarter must be equal to 0 at the end of the contract period. A specific calculation is therefore carried out to set a CHF value that enables BT to recover its costs for the provision of ECAS over the full contract period (including interests and past

[2] ComReg, Emergency Call Answering Service ("ECAS"): Volume of emergency calls for the period January-June 2011, 13 September 2011.

under recoveries). Using this approach, and considering the reasonable costs identified in this report, **TERA Consultants calculates a CHF of € 3.35 per call to be applied from February 2012 until June 2015.** The disallowed costs and future cost decrease anticipated by BT are partly offset by the conservative decrease assumption on volumes of calls.

It is important to note that the calculated level of CHF is stable over the full contract period which also enables ECAS to recover its costs over this period.

1 Introduction

The Emergency Call Answering Service ("ECAS") receives all emergency calls (999/1121) that are made in Ireland. The ECAS centres are responsible for forwarding every genuine call to the responsible emergency service, as quickly and effectively as possible.

All emergency calls are free of charge to the caller as required by EU legislation. In Ireland, ECAS is funded through the Call Handling Fee ("CHF") payable by the telephone network operator and/or the telephone call service provider.

In 2008, the Department of Communications, Energy and Natural Resources (DCENR) has chosen BT Ireland through a public procurement process to provide emergency call answering services on behalf of the state of Ireland. The Concession Agreement will see BT Ireland operate the service until mid-2015.

BT has since developed and made fully functional three ECAS centres, in Navan in Co. Meath, Ballyshannon in Co. Donegal, and EastPoint in Dublin 3. These centres are also known as Public Safety Answering Points ("PSAP").

The relevant costs of the provision of ECAS can be quite high given that BT Ireland's dedicated centres do not share operating costs with other nation-wide operations. Specific IT requirements for ECAS also mean that BT Ireland had to design and build their new PSAP's in Navan and Ballyshannon and upgrade the existing centre in Eastpoint to the applicable standard, all of which entailed significant investment in their infrastructure.

In order to recover the cost of running the ECAS operation, BT Ireland charges a CHF to operators for calls which originate on their networks.

Under Section 58D (1) of the Communications Regulation (Amendment) Act 2007, each year, ComReg is required to review the maximum CHF that may be charged. ComReg may confirm the existing maximum CHF or, following consultation with the ECAS provider, ComReg may raise or lower the existing maximum CHF. Section 58D states that, when reviewing the CHF ComReg "*shall have regard to – the need for the ECAS operator to cover the reasonable costs likely to be incurred by it in operating the service*." ComReg has clarified the meaning of "reasonable costs" and stated that "*in assessing whether costs are reasonable, ComReg will have regard to similar operations in other countries and international best practice. Incurred costs which are clearly unnecessary, excessive or avoidable may not be deemed reasonable, and may have an impact on the 'Call Handling Fee' for the period following any review".*

In 2010, ComReg reviewed the CHF and it is now at €3.35 per call. A study was carried out by Horwath Bastow Charleton (HBC) with a specific focus on set-up costs incurred by BT[3]. The definition regarding reasonable costs has also been made available to the Undertakings.

TERA Consultants has been appointed by ComReg to conduct a review of the current CHF. The present study focuses mainly on in-life costs incurred by BT. Following this review and if deemed necessary by ComReg, the CHF can be adjusted with the adjustment taking effect on 12 February 2012 for the next 12 months. In reviewing the CHF, TERA Consultants considered the costs incurred by BT for the ECAS service and assessed whether these costs are deemed to be reasonable.

Because the level of the CHF is highly sensitive to the volumes of calls received by the ECAS operator, the first section of the report focuses on the number of calls received. Then, the different types of costs borne by the ECAS operator are analysed:

- Costs directly necessary for the operation of ECAS: operator costs, BT pay costs, BT non pay costs, depreciation charges;
- Financial costs: cost of capital, cost of the fund, under or over recovery.

The approach followed by TERA Consultants consists in assessing whether past costs incurred were reasonable and to understand the cost drivers in order to produce forecasts. To assess call centre staff costs, Orbita Consultancy has been involved in the project. Orbita Consultancy has considerable expertise in reviewing and operating call handling centres and rostering operators and reviewing and developing call handing centre volume and especially emergency call handling centre (such as Yorkshire Ambulance Service, North West Ambulance Service, NHS Direct, Strathclyde Constabulary, Cambridgeshire Constabulary, etc.). This has enabled TERA Consultants to establish a recommendation to ComReg for the CHF from 12 February 2012 to 11 February 2013.

It is to be noted that for confidentiality reasons, some figures used to calculate the recommended CHF are not visible in this report.

[3] HBC Final Report to ComReg re ECAS fee review 17 December 2010

2 Volumes of calls

In its document N°11/65[4], ComReg informed the industry that the number of emergency calls handled by the ECAS operator had decreased by around 17% between the first six months of 2010 and the six first months of 2011. A decrease in the number emergency calls has a significant impact in the level of the CHF since, even if some costs supported by the ECAS operator are variable to the number of calls, a large proportion of the relevant costs is fixed (for example fixed asset costs and set up costs). Because the CHF is calculated as the ratio between the ECAS costs and the volumes of calls, a decrease in the volume of calls increases the CHF.

To calculate the CHF over the contract period, it is necessary not only to observe past volumes of calls but also to estimate future volumes. Estimating future volumes and calculating future incomes makes it possible for BT to recoup any under-recovered costs over the remaining life of the ECAS contract.

In order to forecast correctly the total number of calls in the coming quarters, it is necessary to carry out a detailed analysis of volumes of calls in past quarters. The total number of calls made to emergency services consists of connected and non-connected calls. The connected calls are genuine calls to emergency services that are then transferred to the required emergency service. Non-connected calls can include silent, abandoned calls or children playing.

It can be observed that, during the given period, the share of connected calls out of the total number of calls remains relatively stable for all operators except for Eircom. Eircom's proportion of connected calls varied greatly between November 2010 and March 2011. It then remained stable from March 2011 onwards. This trend reflects an initiative within the Eircom network which results in the remediation of faulty lines that generate false emergency calls. Since the initiative has been relatively successful in removing these false calls, the share of connected calls, as well as the total number of calls from Eircom and other operators can now be considered as relatively stable with a decline. Also, the share of Eircom's calls to ECAS has stabilised at the same moment, which supports the view that the volumes of calls have stabilised.

TERA Consultants' forecast has taken into account this issue so that adjusted past volumes are taken into account for future estimates (see annexes 6.2). The issue of the decrease in the number of calls has been particularly important in

[4] ComReg, Emergency Call Answering Service ("ECAS"): Volume of emergency calls for the period January-June 2011, 13 September 2011.

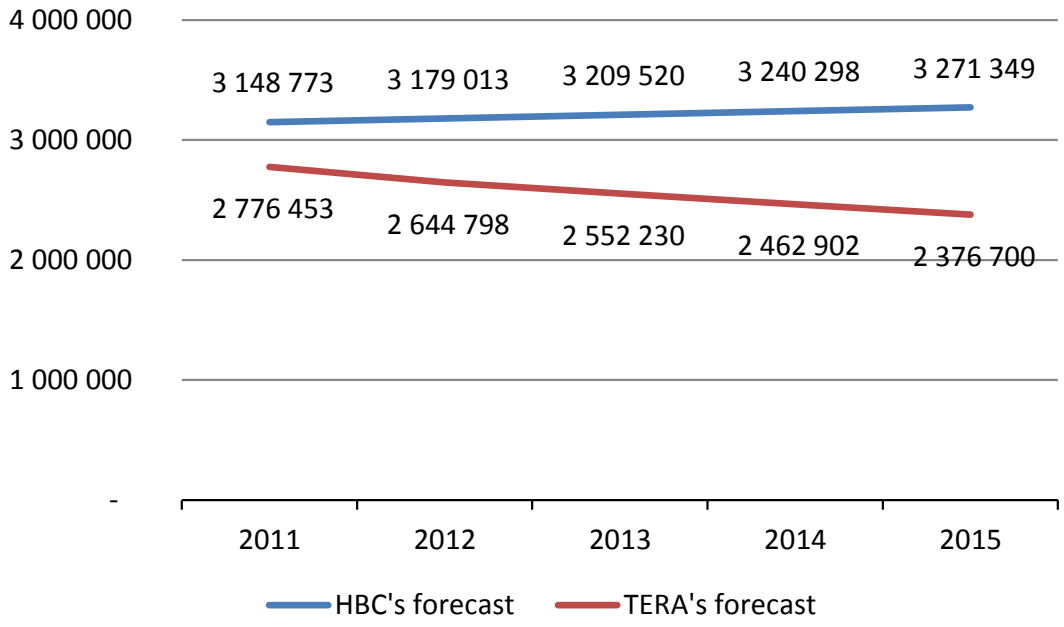
the end of the year 2010 and beginning of year 2011 as shown by ComReg in their document N°11/65[5]. As a consequence, any study without end 2010 and early 2011 months' volume statistics could not anticipate 1) the decrease in the number of calls and 2) now, the stabilisation in the number of calls.

In order to forecast the number of calls per month in the future, it has been assumed that the evolution of the number of calls would evolve like the Irish population (i.e. 1.5% per annum, see section 6.1). However this assumption may be considered as too optimistic as compared to very recent call volumes evolution (see figure below up to March 2011). An optimistic assessment of the number of calls generates a lower CHF. But if such an evolution does not happen, then BT will under recover its costs and a significant increase in the CHF will be necessary over the remaining life of the contract. As the volumes of calls has a significant impact on the level of the CHF, a conservative assumption is preferred to make sure that, in case volumes of calls were to decrease significantly in the future, no significant increase in the CHF would be necessary. On the contrary, if volumes of calls were to increase, then the calculated CHF would decrease in the future years. As a conservative estimate, the gross rate of decrease in service demand should be around -5%, (which is the same order of magnitude of decreases in the last months as compared to previous year) coupled with the population growth of 1.5% (see section 6.1). Therefore the net annual growth for ECAS service demand is taken as -3.5%.

Figure below presents TERA Consultants' forecast for the volume of calls between 2011 and 2015 as well as forecasts produced in a previous study by HBC in 2010 (see section 6.2 for more details).

[5] ComReg, Emergency Call Answering Service ("ECAS"): Volume of emergency calls for the period January-June 2011, 13 September 2011.

Figure 1 - Comparison of forecasts from current and previous review



Source: TERA Consultants, HBC Final Report to ComReg re ECAS fee review 17 December 2010

3 Operational costs[6]

This section details the costs incurred by BT excluding financial costs (see next section) and analyses them. ECAS operational costs include call centre staff costs (operator costs, see section 3.1), management costs and support costs from BT (BT pay, see section 3.2), non-pay costs (see section 3.3), Depreciation charges made of fixed assets and set-up costs (see section 3.4). These costs are described in the next sections.

The primary source of information for the costs incurred by BT for the provision of ECAS is the quarterly management accounts, quarter ended 30 June 2011 (or additional details provided by BT). It is to be noted that costs related to a further quarter will be provided by BT by mid-October 2011 and these costs will taken into account in the final decision made by ComReg.

3.1 Operator costs

BT is being supplied with the call centre operator staff by a sub-contractor. BT pays a fixed charge per hour for each hour requested to the sub-contractor. This is then multiplied by the number of hours requested by BT to determine the call centre operator staff costs. Operator costs represent approximately one third of BT's ECAS costs.

To assess whether the costs paid by BT to BT's operator sub-contractor for the supply of the call centre operator staff is reasonable, it is necessary to verify that the cost per hour on the one hand and the number of operator hours paid by BT on the other hand are reasonable.

3.1.1 Operator cost per hour

TERA has reviewed the components of the hourly rate paid by BT to its contractor. This hourly rate is made of the following elements:

- Basic rate (for wages)
- Bonus
- Employers Pay Related Social Insurance (PRSI)

[6] includes capex

- Churn
- Uplift for unavailable hours
- Resourcing
- Call centre coordinators
- Trainers
- Recruiters
- Agency and recruitment
- Overhead
- EBITDA margin.

TERA has carried out its own benchmark and analysis on each cost item. While many of the cost inputs are reasonable, TERA is of the view that the following elements are not reasonable: bonus level, churn, uplift for unavailable hours, agency and recruitment, overheads and EBITDA margin (see annexes, section 6.3.1 for more details). TERA is therefore of the view that an hourly rate somewhat lower than the one paid by BT currently is reasonable. TERA Consultants observes that BT also conducted a benchmark in late 2010 that leads to a similar order of magnitude. Consistent with the fact that the CA permits past under recoveries to be recovered from the CHF (and over-recoveries also), TERA is of the view that the hourly rate incurred in the past and deemed unreasonable should be disallowed and proposes that the new rate should be applied from June 2011. This was only appropriate time in the contract with the subcontractor by which BT has endeavoured to renegotiate the fixed price but, for a variety of reasons, has not yet concluded.

3.1.2 Number of operator hours

As well as reviewing the full workforce management lifecycle being carried out by BT and the sub-contractor, Orbita independently developed a capacity planning model in order to determine whether the number of operator hours paid by BT to its sub-contractor is reasonable. The following areas were identified for further consideration or attention, since they could affect the costs of providing the service.

Demand Forecasting,

Orbita made the following observations in relation to BT's Demand Forecasting:

- Only long and medium-term forecasting (1 calendar year and 6 weeks) is performed by BT; this suggests that formal processes may not exist to deal with short-term (1 to 4-week) fluctuations that come to the attention of the service provider
- Some secondary inputs to long and medium term forecasts may be missing – from internal (BT) and external sources, e.g.
    - Predictions from Eircom on removal of 'error calls'
    - Population demographic shifts
    - Impending operational process updates / changes
- Demand Forecasts are based on historical analysis with only high-level estimates of volume change,
- Accuracy is not formally monitored and is currently outside best practice parameters. However, now that the service has been provided by BT for over a year, the availability of historical data has improved and accuracy should be expected to increase.
- BT is responsible for Demand Forecasting which has recently been transferred from a central BT function into the ECAS operation and is performed by the Policy and Performance Manager.
- Forecasts are produced using MS Excel spreadsheets, which is in line with an operation of this size and complexity (single channel, single agent skill set).
- Specific analysis of historical data is carried out for regular periods of high demand, e.g. in order to adjust anticipated call volumes for Halloween and New Year's Eve

BT's Capacity Planning,

Orbita made the following observations in relation to BT's Capacity Planning:

- Required operator numbers are based on a 97.5% in 5 sec service level for calls offered, whereas the reporting is based on calls answered,
- "Not ready time"[7] is apportioned as an additional 0.533 agents per 15 minute interval when the calculated requirement exceeds 4.5 Operators. This approach leads to an uplift of approximately 7% (varies depending on exact daily requirements). However, the target for Not Ready time is 5% and the actual level that is achieved is consistently 2%,
- Although the BT shrinkage[8] uplift is 17%, the components equate to 10%,
- The minimum staffing levels that are applied per site mean that there are always at least six Operators across the three centres. This could inflate the requirement by approximately 5% (varies depending on the exact daily requirements). However, the running of all three sites 24x7 is a contractual arrangement and as such is outside the scope of this review.
- Given that the service has only been commissioned for less than twelve months, recognition must be given to need to achieve the optimum balance between effective capacity planning and the requirement to meet the service levels and that BT has achieved its service levels to date.

Schedule production,

Orbita made the following observations in relation to BT's Schedule production:

- The majority of the Schedule Production is performed manually in the eWFM application[9],

[7] "Not ready time" refers to non-phone activities while the Operator is still logged into the telephony system and is intended to cater for short unscheduled breaks and any follow up work that is in accordance with a call taken, etc.

[8] Shrinkage is the term given to additional activities and uplifts needed to convert a base operator requirement up to a full time equivalent employee level. It includes at work activities such as performance coaching, meetings and breaks, plus non work factors such as annual leave, sickness and other absence. BT shrinkage is comprised of at work activities, namely; meetings, 1:1's, team huddles, coaching and refresher training.

- An additional contingency of ✂ over and above the 17% BT shrinkage is provided in the Schedules. The resulting additional resource is not explicitly charged.

Table below details the current key workforce planning assumptions, actual levels and proposed alternative levels for illustration based on Orbita's analysis. The impact assessment and hours are based on the forecast for November 2011.

[9] Aspect eWFM is a market leading workforce planning application that (dependant on the version and functionality purchased) has the ability to derive demand forecasts and capacity requirements plus produce, optimise and manage schedules

Table 1 – Workforce management parameters: current, actual and possible alternatives

Worforce planning elements		Current assumption	Actual level (if relevant)	Alternative assumption proposed by Orbita
Application of Erlang formula for 97.5% service level		Applied to offered volumes	Service level is applicable to calls answered	3% reduction in volumes
Not ready uplift		7% (approximate)	2.0%	2.0%
30min paid break per 7.5 hr paid shift[10]		10%	7.1%	7.1%
BT Shrinkage[11]	**Team meetings**	7%	0.6%	1.0%
	1:1		0.3%	0.5%
	Huddles		0.7%	1.0%
	Coaching		0.7%	1.0%
	Refresher training		0.5%	0.5%
Percentage reduction of hours from Not Ready and shrinkage		-	11.3%	10.4%
Shift efficiency[12]		**-**	65%	75%

Source: Orbita consultancy

[10] 30min divided by 420min (7hrs remaining shift time)

[11] Actual levels taken from "BT Conduit Resourcing Process" version 2.3

[12] Calculation based on: 1-(Looking by 15min period the number of operator hours over requirement plus number of operator hours under requirement, divided by the total number of operator hours required)

Applying the alternative assumptions to the forecasted call levels until 2015 (based on TERA's forecasts described above) gives the following estimates. Call handling time has been assumed to be constant over time.

Table 2 – Number of hours required

	2011/12[13]	2012/13	2013/14	2014/15
Call volumes	2,687k	2,598k	2,508k	2,420k
Alternative assumptions (hours)	71,585	70,090	68,957	67,810

Source : Orbita consultancy

Orbita assessed also that there is still a significant level of contingency built into the calculations for the base call handling hours required (see annexes 6.3.2.12).

Considering the fact that maintaining service targets and hence access to the public to the 999/112 service is of paramount importance and considering the fact that, even if using Orbita's alternative assumptions are theoretically appropriate, they may be difficult to achieve, TERA Consultants proposes to consider the average number of hours calculated using Orbita's alternative assumption and BT's assumption to calculate the CHF.

3.2 BT pay costs

The call answering operators are employed by a sub-contractor. In addition, as BT has responsibility for the overall service performance, there is a BT management presence within each of the centres and direct support for the ECAS service. As a consequence, BT incurs pay costs for the provision of ECAS that are mainly made of the following items:

[13] Based on the full 2011/12 financial year, using forecast levels for all periods inc. July to September

- BT Direct Labour Cost: this corresponds to the costs of First Line Managers, engineers, etc. involved in ECAS (see section 6.4.1 for more details);

- BT Direct Support costs: this corresponds to the costs of the legal, regulatory and finance teams (see section 6.4.2);

- BT Other support function costs (see section 6.4.3 for more details).

TERA Consultants has reviewed all items of each type of cost to verify whether these costs were reasonable. The assessment is done by analysing information provided by BT, communication with BT, as well as available benchmarks. For example, for Direct Labour costs - Base, TERA Consultants has reviewed BT's organisational changes to decide whether to allow certain cost items.

Having reviewed these elements, TERA Consultants notes the following elements:

- BT has decided to phase out several positions following recent decisions to adopt organisational changes. Some of these positions were considered now to be unnecessary by BT. TERA has taken these changes into account for assessing future costs. The forecasts of costs do not include the following positions from the moment they will be phased out (up to December 2011).

    - Three First Line mangers, including one who works full-time on ECAS,

    - Emergency Services liaison manager,

    - Policy & Performance manager,

    - Business manager,

    - Call centre manager,

    - ECAS procedure writer,

    - Forecasting and scheduling.

    TERA is of the view that the costs related to these roles and incurred up to now are not unreasonable but that they should not be included in the future.

- Labour direct support costs have increased since Q4 2010/2011 due to legal procedures with Telefonica starting in March 2011. These costs are not recognised for the operation of ECAS and should not be considered for CHF calculation.

- Other support functions which include logistic functions, network management centre, field transmission team (which were established post the set-up phase), time recording management function, management function, project delivery management function dedicated to ensure the successful delivery of the setup of the ECAS have been partly disallowed in the forecast starting from Q4 2011/12. Indeed, while project delivery management function costs appears reasonable for the setup of ECAS and also for the first year during which some projects were carried out by BT, these costs should be removed now since they are not necessary for the provision of a fully operational "In-life" ECAS. Other costs remain necessary (logistic functions, time recording management function, management function).

TERA Consultants has therefore adjusted these elements to make sure that the CHF only recovers reasonable costs incurred by BT. Orbita Consultancy conducted a mini-operational review to verify that the number of managers for the provision of ECAS services was reasonable[14].

3.3 BT non pay costs

BT non pay costs are mainly made of the following elements:

- Accommodation and computing costs (see section 6.5.1),

- Third Party Costs (HR, payroll) (see section 6.5.2),

- Other staff costs (see section 6.5.3)

- Premises and related costs (see section 6.5.4)

- Maintenance Costs (for fixed assets) (see section 6.5.5)

- Administration costs (see section 6.5.6)

- Network Services (leased lines, data centre, termination charges) (see section 6.5.7)

[14] See annexes, section 6.11

- Lease Interest (see section 6.5.8)

Among these non-pay costs, network services, premises and related costs, accommodation costs and maintenance costs represent more than ✂% of BT non pay costs. BT non pay costs represent ✂% of BT's ECAS costs.

TERA Consultants has assessed whether these costs were reasonable or not by considering available benchmark information or by reviewing the elements incurred by BT. For example, for network services, TERA Consultants has compared BT's costs with the prices published by Eircom in its reference offers[15].

Having reviewed these elements, TERA Consultants considers that the following costs are not reasonable:

- Certain costs within premises and related costs,
- BT's forecast for accommodation costs in Q2 2011/12 was incorrect. To that respect BT agreed that its forecast of Q2 2011/2012 should be reduced by c€20k per quarter.
- The lease interests correspond to the financial costs related to the investment made for the fit-out of the Navan premises and for the kit for the equipment centres and associated maintenance. However, these investments are present in the set-up costs and fixed assets and the financial costs related to these investments (cost of interests to be paid to the bank or to the shareholders) are supposed to be recovered by the cost of capital. If these costs were included in the calculation of the CHF, then financial costs would be double counted: a first time in the lease interest and a second time in the cost of capital.

TERA Consultants has therefore adjusted these elements to make sure that the CHF only recovers reasonable costs incurred by BT.

3.4 Depreciation

3.4.1 Set-up costs

The review of set-up costs was completed last year by ComReg[16].

[15] See section 6.5.7

[16] HBC Final Report to ComReg re ECAS fee review 17 December 2010

Set-up costs are incurred as BT made expenses to set up the new work centres for ECAS provision. The most important elements of set-up costs include:

- Third party call centre costs (the sub-contractor)
- BT Direct Labour costs: Base
- BT Labour cost: Direct Support
- BT Labour cost: Other Support Functions
- BT Labour cost: Accommodation
- BT Labour cost: Third party costs
- Premises and related costs
- Maintenance Costs
- Network Services
- Cost of Capital

In general, set-up costs are only incurred at the beginning of ECAS operation.

The breakdowns of set-up costs are given below. It can be observed that all types of BT labour costs account for the majority (80%) of set-up costs, among which Base Labour costs account for more than a half of the total set-up costs.

Having reviewed all elements within the set-up costs, TERA Consultants concludes that most of set-up costs are reasonable, except for an amount of €232k that should have been excluded based on the previous review by HBC. TERA Consultants therefore propose to exclude this amount again from CHF calculation and this has been accepted by BT.

3.4.2 Fixed assets

The review of fixed assets was completed last year by ComReg[17].

Fixed assets are purchased by BT to enable its operational activities for ECAS provision. Fixed assets include mainly:

[17] HBC Final Report to ComReg re ECAS fee review 17 December 2010

- Hardware,
- Fit out Ballyshannon & Navan,
- Fit out Eastpoint,
- WAN,
- ECAS call handling platform,
- Software & Testing

The major costs are:

- the fit out of Ballyshannon and Navan, the two buildings dedicated to ECAS provision which required most of the upgrading,
- the ECAS call handling platform.

The majority of these costs were reviewed in detail as part of the 2009/10 reasonable cost review.

Set-up costs and expenses for fixed assets are categorised as capital expenditure, so they should be depreciated over the contract life as stipulated in the Concession Agreement. The contract life has been set at five years by the Department of Communications. These elements are taken into account to derive annual costs.

3.5 Summary of operational costs

TERA Consultants has assessed the revenues perceived, the operational and financial costs[18] incurred by BT for the provision ECAS for each quarter of the Concession Agreement, i.e. between mid-2010 and mid-2015. This assessment has consisted in:

- Assessing whether past costs (up to June 2011) incurred by BT are reasonable and disallowing these costs that are not considered reasonable,

[18] See respectively section 3 and section 4

- Forecasting these costs and revenues based on the understanding of the different cost drivers. TERA Consultants has taken some conservative assumptions for forecasts as explained earlier.

The total level of costs per quarter which BT should be allowed to recover (excluding under recovery) through the CHF is approximately €✂M per quarter, i.e. €✂M per annum. This is around €✂M lower per quarter than what was planned in HBC report. TERA Consultants notes this difference can be explained by the fact that many cost drivers have changed since the last review made by ComReg and their consultants last year such as the evolution of the number of calls or the change in the hourly rate.

4 Financial costs

In addition to the operational costs incurred by BT and reviewed in the previous section, BT incurs financial costs for the provision of ECAS. These financial costs are:

- **The cost of capital.** This is the guaranteed rate of return which level is determined in Schedule 22 part 4 of the Concession Agreement. It is equal to 6.63% and should be applied every year to the Gross Book Value of fixed assets and set up costs related to ECAS[19] as detailed in previous sections.

- **The cost of the Sinking fund**. The Sinking Fund is designed to accumulate, over the term of the ECAS contract, sufficient funds to cover the loss or gains from BT if revenues from the CHF are below or above reasonable costs incurred by BT (including cost of capital). The cost of this fund is €250,000 per annum for BT.

- **The under recovery from previous years**. At the beginning of the Concession Agreement, the CHF was lower than it is today. It was equal to €2.23 per call up to February 2011. As the CHF was set too low because of the decline in call volumes, BT incurred losses in the initial quarters. These losses should be recovered by the future CHF to make sure that BT does not under recover its costs. The CHF is today equal to €3.35 per call and will generate some over-recoveries in the future as can be observed in the diagram below. These over-recoveries are necessary to balance under-recoveries combined with:

    - the reduction of disallowance of some specific cost items as explained in sections 3.1, 3.2 and 3.3,

    - the reduction in the number of hours that BT should require from the sub-contractor (see previous section), despite the conservative assumptions on the number of calls

- **The interest related to this under recovery**. The loss incurred by BT in early quarters obliged BT to incur financial costs to fund this loss.

[19] This is different from traditional approaches to calculate cost of capital where cost of capital is generally calculated as a percentage of the Net Book Value. This has been agreed in the Concession Agreement

5 Recommended CHF and sensitivity analyses

Once the operational costs, cost of capital and cost of the Sinking Fund and BT's ECAS revenues are calculated for each quarter, it is then possible to calculate the loss or gain for each quarter. This enables to assess whether BT has under recovered its costs in past quarters. **In order to make sure that BT is exactly recovering its reasonable costs incurred for the provision of ECAS over the contract period, the discounted sum of under and over recoveries of each quarter must be equal to 0 at the end of the contract period[20].**

Such a calculation is therefore carried out to set the CHF that enables BT to recover its costs over the full contract period (including interests and past under recoveries). Using this approach, TERA Consultants calculates a CHF of € 3.35 per call to be applied from February 2012 until June 2015 which is the same as the current CHF.

It is important to note that this level of CHF is the one that enables ECAS to recover its costs over the full contract period and is stable. Each year, depending on reasonable costs effectively incurred by BT compared to the ones forecasted here as well as on effective volume of calls, the CHF will need to be adjusted.

Also, it is important to note that TERA Consultants has used conservative assumptions, in particular regarding the number of calls or on the number of hours. Conservative assumptions have been considered in order to make sure that, in case volumes of calls were to decrease significantly or reasonable costs were to increase in the future, no significant increase in the CHF would be necessary. On the contrary, if volumes of calls were to increase or reasonable costs were to decrease, then the calculated CHF would need to decrease in the future years.

For information, some key assumptions have been used in the previous sections (such as assumptions for the calculation of the number of operator hours, hourly rate for operators, number of calls, etc.).

Moreover, TERA Consultants has carried out sensitivity analyses in annexes (see section 6.10).

[20] Using an agreed discount rate

6 Annexes

6.1 Demographic and economic information

Two main macroeconomic statistics are used in this report to forecast future increase of various cost elements: projected population growth and wage inflation.

Projected population growth is used to forecast the demand for emergency services. The rate of population growth is used since it is assumed that the number of accidents increases with the number of population, hence the number of calls to emergency services increases with the number of population. Population growth is estimated by CSO to be at 1.5%[21] per year between 2006 and 2026.

Wage inflation is used to forecast future labour costs borne by BT, the ECAS provider and its sub-contractors who directly (e.g. the operator sub-contractor) or indirectly (e.g. other sub-contractors, auditors) contribute to ECAS provision. The wage increase is set at 0.0% per year, based on the average of estimates from macroeconomic studies by Davy and Goodbody for 2012[22]. Wage inflation is used instead of CPI since it is assumed that the majority of costs involve labour costs - BT labour costs or labour costs of sub-contractors.

Additionally, the price level change for electricity and rent is required within the forecast of Premises and related costs. Electricity price change is set at 0.27%. This is the latest annual price increase from 2010 to 2011, as indicated in Eurostat statistics for Ireland's electricity price[23].

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[21] Central Statistics Office, "Regional Population Projections 2011-2026", 2008, available at http://www.cso.ie/releasespublications/documents/population/current/poppro.pdf (as of 28 September 2011)

[22] Davy, 'Macro Forecasts', last updated on 19 September 2011, available at http://www.davy.ie/GenericResearch?page=macroforecasts (as of 28 September 2011). Goodbody, rolling agenda, September 2011

[23] Electricity prices for industrial consumers, €/kWh, available at http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00114&plugin=1. Percentage change calculated by TERA Consultants.

6.2 Volumes of calls to ECAS

The forecasts of the total number of calls to emergency services are based on various statistics provided by BT regarding the number of calls made to emergency services from each operator each month, the number of connected calls from each operator each month, and the total number of calls to ECAS originating from fixed networks.

It is observed that the number of calls from each operator as a share of total calls to emergency services is mostly stable throughout the months, except for the number of calls originating from Eircom's network (see Figure 2 below). On the one hand, the number of calls from Eircom fluctuates between November 2010 and February 2011, ranging from ✂% to ✂% of total calls; on the other hand, this number stabilises during the 6 months starting from March 2011.

Figure 2- Eircom's share of total calls to emergency services

✂

Source: TERA Consultants' analysis of BT's data

Furthermore, as can be seen from the figure below, during the given period, the share of connected calls out of the total number of calls remains relatively stable for all operators except for Eircom. Eircom's proportion of connected calls varied greatly between November 2010 and March 2011. It then remained stable at around ✂% from March 2010 onwards, like for Vodafone and O2.

Figure 3 - Share of number of connected calls / total number of calls from each operator

✂

Source: TERA Consultants' analysis of BT's data

These trends reflect an initiative within the Eircom network which results in the remediation of faulty lines that generate false emergency calls. Since the initiative has been relatively successful in removing these false calls, the share of connected calls, as well as the total number of calls from Eircom and other operators can now be considered as relatively stable.

TERA Consultants' forecast has taken into account this issue so that the adjusted past volumes are taken into account for future estimates. The issue of the decrease in the number of calls has been particularly important in the end of

the year 2010 and beginning of year 2011 as shown by ComReg in their document N°11/65[24]. As a consequence, any study without end 2010 and early 2011 months' volume statistics could not anticipate 1) the decrease in the number of calls and 2) now, the stabilisation in the number of calls. This explains why volume forecasts produced by TERA are lower than those produced from the previous review, which took place during 2010.

Considering the evolution of the number of calls from Eircom, and in order to have the correct forecasts of monthly total calls to emergency services during 1 full year and to fully take into account the fluctuations from one month to another, the total number of calls from all operators without the extra non-connected calls from Eircom's network is needed i.e. the non-connected calls due to faults in Eircom's network between September 2010 and August 2011. Using the average percentage of calls from Eircom network without faults (✂%), measured over the stable period between March and August 2011, and the average percentage of connected calls out of total calls from Eircom (✂%), measured over the same stable period, the adjusted number of total calls from Eircom's network is estimated for the months before March 2011 i.e. between November 2010 and March 2011 and without the extra non-connected calls. As for September 2010 and October 2010, the estimates are deduced from the average share of calls from Eircom among total number of calls from fixed network to emergency services (✂%). It is then possible to establish a monthly pattern of calls made from all operators to emergency services within a full 12-month cycle.

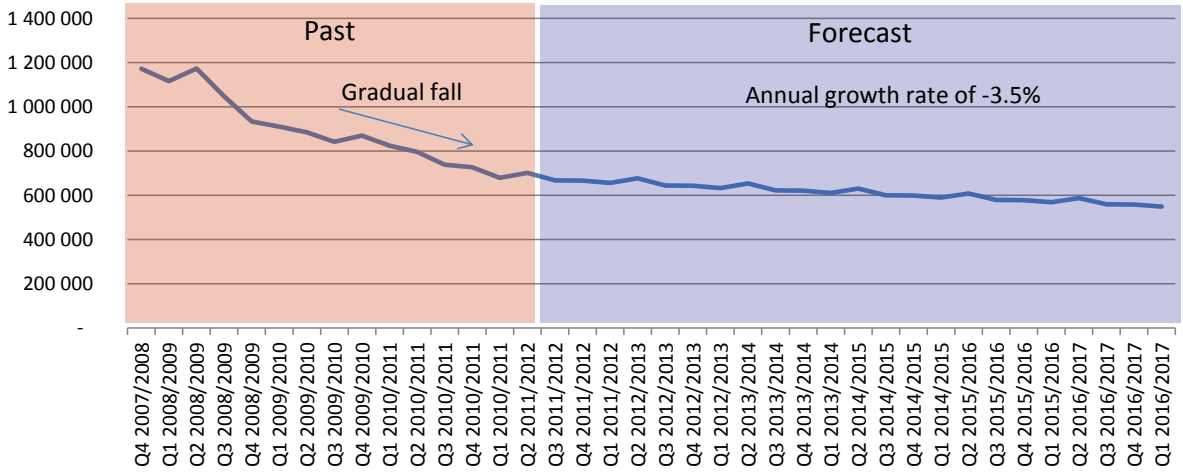
Using this pattern of volumes of calls over a full year, it is possible to predict the number of calls per month in the future by assuming that the evolution of the number of calls will evolve like the Irish population (i.e. 1.5% per annum, see section 6.1). But this assumption may be considered as too optimistic compared to very recent evolution (see figure below up to March 2011). An optimistic assessment of the number of calls generates a lower CHF but if such an evolution does not happen, then BT will under recover its costs and a significant increase in the CHF will be necessary over the remaining life of the contract. As the volumes of calls has a significant impact in the level of the CHF, a conservative assumption is preferred to make sure that, in case volumes of calls were to decrease significantly in the future, no significant increase in the CHF would be necessary. On the contrary, if volumes of calls were to increase,

[24] ComReg, Emergency Call Answering Service ("ECAS"): Volume of emergency calls for the period January-June 2011, 13 September 2011.

then the calculated CHF would need to decrease in the future years. As a conservative estimate, the gross rate of increase in service demand should be around -5%, coupled with the population growth of 1.5% (see section 6.1), the annual growth ECAS service demand is taken as -3.5%.

The estimates for future volumes of calls are presented below.

Figure 4 - Total number of calls to emergency services



Source: TERA Consultants' analysis of BT's data

6.3 Operator costs

6.3.1 Operator cost per hour

The operator sub-contractor provides BT with the call centre operator staff. BT pays a fixed charge per hour for each hour requested to the sub-contractor. This charge is then multiplied by the number of hours requested by BT to determine the call centre operator staff cost (called later "operator costs").

It is to be noted that in its report of 1 October 2010, BT conducted a benchmark report for the call centre services provision for ECAS, which was shared with its operator sub-contractor that indicates that a much lower hourly rate would be reasonable.

TERA conducted its own analysis and is of the view that an hourly rate close to that calculated by BT is reasonable. The hourly rate is made of the following elements:

- Basic wage,

- Bonus,
- Employer PRSI,
- Churn,
- Uplift for unavailable hours,
- Resourcing,
- Call centre coordinators,
- Trainers,
- Recruiters,
- Agency and recruitment,
- Overhead,
- EBITDA margin.

It is accepted that some of the cost inputs are reasonable. However, for others it considers amendments may be necessary especially for bonuses (Per TERA's own benchmark information bonus rates are approximately 10% for call centre operators), churn, uplift for unavailable hours, agency and recruitment and mainly overhead, for which BT's subcontractor applied an overhead that is higher than BT's benchmark information.

Consistent with the fact the Concession Agreement allows for past under recoveries to be recovered from the CHF, TERA is of the view that unreasonable hourly rates incurred in the past should be disallowed and proposes that the new rate should be applied from June 2011, because this was the period in which the contract change between BT and its sub-contractor should have been concluded..

6.3.2 Number of operator hours

6.3.2.1 Approach

To assess whether the charge paid by BT to the sub-contractor for the supply of the call centre operator staff are reasonable, it is also necessary to verify that the number of operator hours paid by BT is reasonable. Orbita Consultancy, consulting company with expertise in reviewing and operating call handling centres and rostering operators and reviewing and developing call handing centre volume, was involved for this review.

On project start-up, Orbita requested the information that would enable delivery to the requirements. Then, on 19 and 20 September 2011, Orbita consultants visited the three ECAS centres at Eastpoint, Navan and Ballyshannon, during which they:

- Received detailed briefs from ComReg,
- Met and interviewed key nominated individuals from BT and the operator sub-contractor,
- Understood service delivery arrangements between BT and the sub-contractor,
- Were given information on workforce planning and management, covering the full lifecycle: forecasting, capacity planning, scheduling and shift planning,
- Raised their awareness of call answering processes and quality management,
- Listened to and observed live calls,
- Conducted a mini-operational review (see section 6.11 for more details),
- Collected additional information to support the project.

Subsequently, Orbita collated its observations, consolidated information collected during the meetings and analysed the documentary evidence provided by ComReg, BT and the sub-contractor. Orbita then created a capacity planning model that could use the parameters agreed by ComReg, BT and the sub-contractor in order to determine Operator resource requirements for ECAS. By

running the model for various scenarios and through Orbita's expert opinion on contact centre set-up and operational management, Orbita have been able to address all the project requirements that were allocated to Orbita.

The following paragraphs interpret the logic and parameters currently used by BT and the operator sub-contractor in the workforce management lifecycle. The workforce planning cycle consists of the following elements:

- Demand Forecasting,
- Capacity Planning,
- Schedule Production,
- Schedule Management,
- Performance Management,
- Intraday Management,
- MI & Analysis,
- Database Configuration & Management.

Ultimately, the focus of the project was to assess the staffing level requirements of the ECAS operation and although this led to an emphasis on Capacity Planning, all areas of the workforce planning cycle impact on the ability to resource to necessary levels and have therefore considered and analysed.

6.3.2.2 Demand Forecasting

BT is responsible for Demand Forecasting which has recently been transferred from a central BT function into the ECAS operation and is performed by the Policy and Performance Manager.

Forecasts are produced using MS Excel spreadsheets, which is in line with an operation of this size and complexity (single channel, single agent skill set). The process is manual, meaning that there are no feeds or links from the telephony system or workforce scheduling application.

- Long-term Demand Forecasts are produced for the calendar year at a monthly granularity for inbound call volumes. These are reviewed at on a monthly basis with updates and estimations based on actual call volumes

for the preceding months. This provides an historic 'Growth Contraction Factor' that can then be applied to future months.

Most of the recent variation in volume is understood to result from work by Eircom to remove 'ghost' calls generated by the telephony network; the impact of which is being estimated by recent monthly trend analysis.

- Medium-term Demand Forecasts are produced approximately six weeks in advance of the calendar month. The period of the forecast will be four to six weeks (depending on the number of weeks that cover the calendar month). These forecasts are based on historical analysis of the corresponding period from the previous year and cover both call volumes and call handling times at an intra-day (15min interval) level.

  The intra-day volumes are used to produce a smoothed profile called the Time of Day factor (TOD), which is combined with the long-term monthly volume forecast to produce the anticipated call demand.

- Short term daily or intra-day re-forecasts are not formally undertaken, though operations management will review and confirm the scheduled operators either if the on day service levels are not being met or if expected resource levels are not attained due to sickness or other absence.

There are no other formal inputs – that could impact call volumes – into the Demand Forecasting process from external or internal sources. For example, the following could be considered,

- Predictions from Eircom on removal of 'error calls',
- Population demographic shifts,
- Impending operational process updates / changes.

Specific analysis of historical data is carried out for regular periods of high demand, e.g. in order to adjust anticipated call volumes for Halloween and New Year's Eve.

The accuracy of Demand Forecasting is not completely monitored. Although actual daily call volumes are compared with forecasts; actual call handling times are not analysed against forecasts.

Accuracies appear to be outside best practise levels. In part, this may be due to the lack of detailed data predating go-live; but also may result from:

- Reliance on the previous year's intra-week and intra-day profiles rather than more recent data,

- Not considering other anticipated influences on Demand Forecasting.

The table below compares the accuracy of call volume forecasts with best practise.

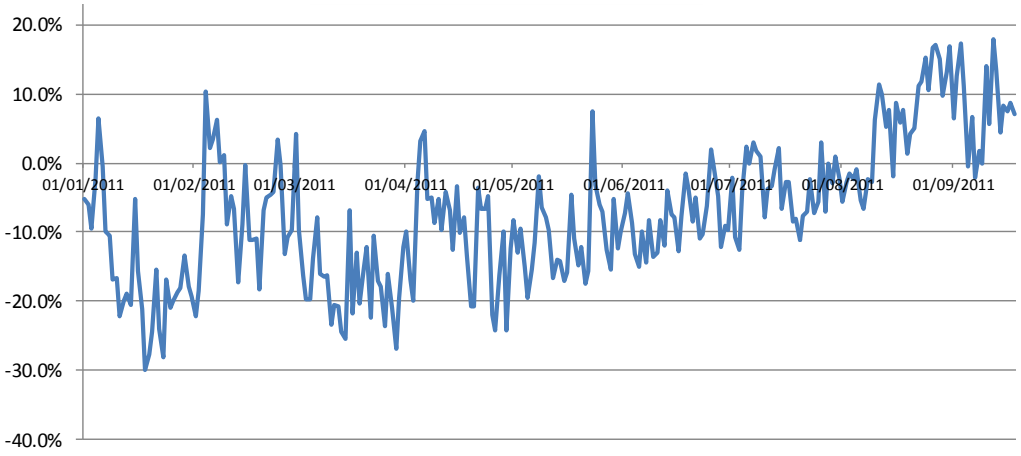
Table 3 - Comparison of forecast accuracy with best practice

Forecast	Average[25]	Max / Min	Best Practise	Measured
Monthly	+10% / -4%	+14% / -6%	+/- 5%	No
Daily	+8% / -11%	+18% / -30%	+/- 5%	Yes
Intraday	N/A	N/A	+/- 5% for 90% of periods	No

Source : Orbita consultancy

The chart below shows daily variation of actual call volumes against forecast since 1 January 2011.

Table 4 - Variation of daily call volumes with respect to forecast



Source : Orbita consultancy

The chart shows that actual call volumes can vary by up to +18% and -30%.

Current inaccuracies in forecasts are not likely to be directly felt by the operation in terms of Service Level performance, as the level of staffing contingency means that periods of under forecast still do not lead to under resourcing. However, reduced utilization will occur during periods of over forecasting.

[25] Calculation is based on the average positive or negative variation for the forecast against actual volumes for monthly and daily totals

Greater accuracy in Demand Forecasting will become more critical if improved efficiency is required from the operation going forward.

6.3.2.3 Capacity Planning – principles and process

Capacity Planning is the process for determining the number of FTE needed to handle the call volumes that are output from the Demand Forecasting calculations. The responsibility is split between BT and the operator sub-contractor.

- BT converts the Demand Forecasts into a 'Base Operator Hours' Requirement' by 15 minute intervals,
- To the Base Operator Hours' Requirement, the operator sub-contractor applies shrinkage factors, i.e. uplifts for off-phone time such as training, meetings etc. that are to be included in the chargeable hourly rate. The operator sub-contractor then applies further internal, non-chargeable shrinkage factors to allow for absence, holidays, training activities, etc.

The resulting Capacity Requirements are integrated into the Forecasting Worksheet, to a granularity of 15 minute intra-day periods, and used to drive the basic operator resource requirements using the industry standard queuing formula (Erlang).

As the Demand Forecast refers to a single work-type, i.e. answering the nominated emergency calls, consideration of other Operator activity is not necessary. In effect, there is a single skill-set for Operators. Lead Operators have additional responsibilities but perform the same call handling duties and their time is catered for in the schedule build. Therefore, the Capacity Plans are a straight forward conversion of demand to Operator numbers without the need to separate or calculate different skill groupings.

The three centres also operate virtually, i.e. calls are delivered to operators as if it is a single centre. This means that during the calculation for Base Operator Resource Requirements, no account needs to be taken of any resource constraints or other operational impacts that are specific to any single site. In effect the call demand can be viewed and base resource hours calculated as if it were a one site operation. Local operational constraints, such as minimum staffing levels, are applied later in the planning process to determine the final resource allocation by site.

6.3.2.4 Capacity Planning (BT)

Operator capacity requirements are constructed from a base of 2 different service levels, using a fractional Erlang formula, the results of which are displayed in stages:

1 Stage 1: Service level of 97.5% calls answered in 5 sec

2 Stage 2: Service level of 85% calls answered in 5 sec

3 Stage 3: Service level of 97.5% calls answered in 5 sec, plus 0.533 Operators for each period where the requirement is above 4.5 Operators

4 Stage 4: Service level of 85% calls answered in 5 sec, plus 25% contingency, plus 0.533 Operators for each period where the requirement is above 4.5 Operators

Of the above calculations one of the final two will indicate the highest requirement for Operator numbers; and whichever produces the highest is used for that 15 minute interval.

There are some points to note:

- Normally, service levels apply to calls offered and this is how the capacity planning is done for ECAS. However, for reporting purposes, BT applies the 97.5% service target to the number of calls answered and ignores calls abandoned. So in effect, the report is based on fewer calls than those used to plan resourcing requirements.
- The 25% contingency is applied to the 85% in 5 sec SLA in order to ensure that full service performance can be maintained even if one centre is not available. This is set out in Section L2 – Operator Dimensioning, in Schedule 18 of the contract. (It states that the 25% contingency level is to be based on a service level of 85% in 5 sec so that if one of the centres goes offline the other two should be able to provide the service at this reduced level.)
- The addition of 0.533 Operators (where the requirement is above 4.5 Operators) is done to allow for Not Ready time.

  Not Ready time refers to non-phone activities while the Operator is still logged into the telephony system and is intended to cater for short unscheduled breaks, any follow up work that is in accordance with a call taken, etc.

  It is normal practise to allow for this time, though the exact composition and size of time allowance will vary by industry and local operational preferences. In Orbita's experience this type of off phone activity

allowance would be applied as a percentage uplift via shrinkage (linking it to operator numbers), rather than by a flat rate increase on the Operator level. The method used for ECAS equates to an increase of approximately 7%, whereas the agreed Not Ready target is 5% and the level consistently achieved since November 2010 is 2%.

The higher Operator requirement from calculations in stage 3 or stage 4 is then rounded up to the nearest whole agent. Stage 3 usually provides the requirement, and when Stage 4 does provide a higher figure it is only a fraction of an Operator more.

Finally, a predefined look-up table is used to split the resource across the three sites.

At this point, a minimum staffing level is applied of two Operators per centre, giving a minimum of six Operators across all sites at any one time. The allocation of resourcing between the sites does not change the overall Operator levels.

The output is the Base Operator Hours' Requirement by 15 minute intervals.

6.3.2.5 Capacity Planning (the operator sub-contractor)

The operator sub-contractor carries out subsequent stages of the Capacity Planning process, working from the Base Operator Hours' Requirement for each site.

For charging purposes, the operator sub-contractor adds an agreed 17% shrinkage to allow for paid agent breaks and performance management activities delivered by BT.

The table below details the shrinkage components as described in the BT the operator sub-contractor Resourcing Process document, the Agreed Uplift that is applied by the operator sub-contractor and the Equivalent Level as calculated by Orbita based on a FTE working 37.5 paid hours per week.

Table 5 - Shrinkage applied by BT

Shrinkage[26]	Component	Agreed Uplift	Equivalent Level
Paid breaks	30min per 7.5hr paid shift	10%	7.1%[27]
Team meetings	1hr per agent per month	7%	0.6%
1:1	30min per agent per month		0.3%
Huddles	15min per agent per week		0.7%
Coaching	15min per agent per week		0.7%
Refresher training	45min per agent per month		0.5%
Total		17%	9.9%

Source : Orbita consultancy

The BT operator sub-contractor Resourcing Process document indicates that shrinkage levels should be reviewed at the end of the Service Pilot.

Orbita's observations and anecdotal evidence suggest that not all the reasons for shrinkage are being carried out. Conversely, if we have interpreted the terminology correctly, then 1:1's appear to happen weekly rather than monthly.

Orbita would also comment that the allowance of 30 min paid breaks is higher than normally observed in contact centres. However, this is an operational decision, not a planning one.

[26] Actual levels taken from "BT Conduit Resourcing Process" version 2.3

[27] 30min divided by 420min (7hrs remaining shift time)

6.3.2.6 Schedule production

6.3.2.6.1 Principles and process

A dedicated operator sub-contractor resource builds the Schedules using some of the functionality from eWFM[28] workforce planning software – which is an industry leading application and more than suitable for the size and complexity of the operation.

Initially however, the Schedules are constructed manually, using pre-defined constraints per individual Operator which fall broadly into three categories, those who work:

- Nights – between 20:00 and 08:00
- Days – between 08:00 and 20:30
- Part-time – between 16:30 and 23:00[29].

The automatic build function within eWFM is then used to optimise the breaks. Due to the apparent stability of the call arrival profile, the building of the schedule is mainly centred on the:

- Cycling of staff through the various start-times on their prescribed shifts,
- Incorporation of off-phone activities, long term absence and annual leave.

A rule of thumb is applied during the build process to aim to add ✂ Operators above the requirement passed over by BT. This is done to ensure the 17% of chargeable shrinkage is catered for, plus build in additional contingency. Given that the required staffing levels provided by BT are sufficient to attain the call answering service levels, this approach appears to be overly cautious and results in a significant amount of over resourcing (see later).

Although specific dates for training or similar activities are required to be notified prior to the Schedules being built, the 17% uplift is applied across the board to be used as and when required. Greater efficiency of schedules could be

[28] Aspect eWFM is a market leading workforce planning application that (dependant on the version and functionality purchased) has the ability to derive demand forecasts and capacity requirements plus produce, optimise and manage schedules

[29] Based on anecdotal evidence.

achieved if more specific slots were allocated to some of the offline activities such as 1:1 feedback and coaching sessions, though there would be an increase in the operational overhead to plan and manage them in more detail. Holiday requests are provided via the operator sub-contractor co-ordinators based at each site and are required six weeks in advance. This is in line with standard UK call centre practise whereby holiday requests are required in time for the schedule build, which will usually be released to staff between 4 and 6 weeks prior to being worked.

6.3.2.6.2 Required capacity versus that supplied by operator sub-contractor

Detailed deviation reports supplied by BT show requested Operator levels against the actual level that is supplied and online by 15 minute periods (taken from the OASIS system). The reports show an average of ✂% Operator hours over the requirement. This would:

- Include the 17% BT shrinkage allowance, but
- Exclude the ✂% sub-contractor shrinkage which covers eventualities when Operators are not logged in on the OASIS system

So the over provision of resource is approximately ✂% which is assumed to be absorbed into sub-contractor's hourly charging rate.

6.3.2.7 First Line Managers (FLM) and Lead Operators

FLM Schedules are produced separately by the Head of Operations in conjunction with the FLM's. The aim is to cover the majority of the operational hours from at least one of the centres. Lead Operators are trained in core FLM duties and are identified in the Schedules. Provision is made to ensure at least one Lead Operator is available whenever no FLM is present.

6.3.2.8 Schedule Management

The operator sub-contractor is responsible for maintaining and managing published Schedules.

Schedules are released to the staff four to five weeks before the shifts are due to be worked. The schedule is accessed at each site by a terminal that links to the eWFM system. Operators do not have access to the system; shifts and breaks are communicated via printouts to staff on a daily basis. The lack of direct access to the eWFM system means that the management of schedules is a far more manual process, but the reduced cost of licences should offset this

activity. The relatively small size of the operation means that it is not too onerous to release and manage the schedules in this way.

A weekly report is used to examine next week's Operator roster v. the requirement. Potential periods of under resource are highlighted and mitigation plans are made.

Late requests for absence, e.g. for holidays, training, etc. are considered, with a general rule in place that a reduction of one Operator per shift, per centre, per day can be accommodated. Any requests that may exceed this rule will be the responsibility of the local sub-contractor co-ordinator to accept or decline.

As agents are not directly logged into the workforce planning system, schedule adherence is manually recorded but is limited to significant events such as coaching and Lead Operator duties

Adherence to shift and break start and end times is not measured and therefore the true level of schedule adherence is not fully understood. It should be possible to link the Automatic Call Distributor ("ACD") into the workforce planning system and therefore upload data on agent activity which would allow automated adherence reporting down to timing of breaks, etc[30]. The importance of more rigorous schedule management and adherence would increase if the level of latent operator capacity is reduced.

6.3.2.9 Performance management, Intraday management, MI and analysis

A full review of these aspects of the workforce management cycle was not necessary to meet project requirements and was therefore out of scope. However, Orbita has commented on Performance Management in a mini-operational review – see Section 6.11.

6.3.2.10 Summary of findings and their impact

About Demand Forecasting

- Only long and medium-term forecasting is performed; this means that short term (mid-month, on the day, etc.) changes in demand are not

[30] However, it should be noted that for security reasons the ACD system (controlled by the ECAS provider) is not connected to the workforce planning system(controlled by the specialist call centre company)

anticipated and operator resource planning cannot be modified with best effect.

- Some secondary inputs to long and medium term forecasts may be missing – from internal (BT) and external sources
- Demand Forecasts are based on historical analysis with only high-level estimates of volume change
- Accuracy is not formally monitored and is currently outside best practise parameters. However, now the service has been provided by BT for over a year, the availability of historical data has improved and accuracy should be expected to increase

About Capacity Planning

- Operator numbers are based on a 97.5% in 5 sec service level for calls offered, whereas reporting is based on calls answered
- Not ready time is apportioned as an additional 0.533 agents per 15 minute interval when the calculated requirement exceeds 4.5 Operators. This approach leads to an uplift of approximately 7% (varies depending on exact daily requirements). However, the target for Not Ready time is 5% and the actual level that is achieved is consistently 2%. It would be normal workforce planning practise to apply the actual levels when calculating the operator requirement.
- Although the BT shrinkage uplift is 17%, the components equate to 10%
- The minimum staffing levels that are applied per site mean that there are always at least six Operators across the three centres. This could inflate the requirement by approximately 5% (varies depending on the exact daily requirements. If this were to change the operator resource levels could be reduced, but this would also need to be risk assessed against the decrease in resilience from the reduced number of operating sites at certain times of the day.

About Schedule Production

- The majority of Schedule Production is performed manually in the eWFM application

- An additional contingency of ✂% over and above the 17% BT shrinkage is provided in the Schedules. The resulting additional resource is not explicitly charged for. Although it is likely to be factored into the sub-contractor's hourly charge calculation, so there is an opportunity to review the hourly rate should the contingency levels be reduced.

The table below demonstrates the impact of the above findings on important capacity planning parameters. Impacts and results are based on a week taken from the November 2011 forecast & capacity plan. Calculations are based on established Erlang queuing formula (named after Agner Krarup Erlang) that is an accepted industry method for deriving the resource levels needed to satisfy a specified service level for a given number of calls and Average Handling Time (AHT) in a stated time period.

Table 6 – Workforce Management (WFM) parameters: current, actual and possible alternatives

Workfoce Planning element		Current assumption	Actual level	Alternative assumption	Notes
Application of Erlang formula for 97.5% service level		Applied to offered volumes	Service level is applicable to calls answered	3% reduction in volumes	3% is an estimate based on recent abandon levels
Not ready uplift		7% (approximate)	2.0%	2.0%	
30min paid break per 7.5 hr paid shift		10%	7.1%	7.1%	Use actual in model
BT Shrinkage [31]	**Team meetings**	7%	0.6%	1.0%	Allowance increased from levels stated in documentation, based on anecdotal evidence
	1:1		0.3%	0.5%	
	Huddles		0.7%	1.0%	
	Coaching		0.7%	1.0%	
	Refresher training		0.5%	0.5%	
Percentage reduction of hours from Not Ready and shrinkage		-	11.3%	10.4%	% hrs saved from current assumptions
Shift efficiency[32]		-	65%	75%	Actual calculated

[31] Actual levels taken from "BT Conduit Resourcing Process" version 2.3

				from Aug '11

Source : Orbita consultancy

6.3.2.11 Impact on past hours charged

To understand the cost implications on the service since it transferred to BT, the alternative assumptions have been applied to historical forecasts used. The initial quarter (July 2010 to September 2010) has been omitted to allow for bedding in and stabilisation of the operations and shrinkage parameters. Call arrival profiles and handling times have been assumed to be stable and at the current levels. The call demand has then been input into the Orbita capacity model which uses Erlang formula to derive the base operator hours required. The current and alternative shrinkage assumptions have then been used in isolation to demonstrate the difference in hours and cost between the two sets of parameters.

Table 7 - Application of alternative assumptions to historical forecasts

	2010/11 Q2	2010/11 Q3	2010/11 Q4	2011/12 Q1	Total
Call volumes[33]	765k	815k	734k	696k	3,009k
Current assumptions (hours)	✂	✂	✂	✂	✂
Alternative assumptions (hours)	19,372	19,872	18,804	18,467	76,515
Difference in hours	✂	✂	✂	✂	✂

Source : Orbita consultancy

[32] Calculation based on: 1-(Looking by 15min period the number of operator hours over requirement plus number of operator hours under requirement, divided by the total number of operator hours required)

[33] Calls offered based on forecasted volumes provided in the preceding month

Applying the alternative assumptions to the forecast call levels until 2015 (based on TERA's forecasts detailed in section 6.2) gives the following estimates. Call handling time has been assumed to be the current level.

Table 8 - Volumes decrease by 3.5% per annum (see section 6.26.1)

	2011/12[34]	2012/13	2013/14	2014/15
Call volumes	2,687k	2,598k	2,508k	2,420k
Current assumptions (hours)	✂	✂	✂	✂
Alternative assumptions (hours)	71,585	70,090	68,957	67,810
Difference in hours	✂	✂	✂	✂

Source : Orbita consultancy

6.3.2.12 Impact on service targets

Maintaining service targets and hence access to the public to the 999/112 service is of paramount importance, in order to assess the potential impact of any changes to the resource capacity the agent levels for both the current and alternative planning assumptions have been measured against the following criteria: Maximum call capacity per hour whilst achieving a service level of 97.5% of offered calls answered in 5s.

The following analysis enables to compare what the call capacity is taking into account Orbita's alternative assumption and to compare it with the number of offered calls. Same comparison can be carried out using BT's own assumption for calculated the required number of hours. The agent levels used for the calculation will be after Not Ready time, rounding to whole operators and minimum staffing (6 operators – 2 per site) have been applied, it also accounts

[34] Based on the full 2011/12 financial year, using forecast levels for all periods inc. July to September

for the basing of calculations on calls offered with the service level applying to answered calls. Shrinkage uplifts have not been applied as these are intended to cater for time that is not on the phone answering calls. The calculations are based on the same weeks' data from the November 2011 forecast – 53,962 calls offered.

Table 9 - Maximum call capacity

Weekly Metric	Current assumptions (BT)	Alternative assumptions
Call capacity to answer 97.5% calls offered in 5s	✂	✂
Difference to forecast – absolute	✂	✂
Difference to forecast - %	✂%	✂

Source : Orbita consultancy

This shows that there is still a significant level of contingency built into the calculations for the base call handling hours required (12.3%).

This is reinforced by the current levels of utilisation (time spent on call work divided by time logged in to take calls) reported for the operators averages 27.3% since January 2011. Whilst low levels are to be expected due to the high service targets, these are still below levels Orbita has observed in other similar environments. The level of utilisation attainable is dependent on a number of factors that include; service targets, call duration, hours of service, size of operation, stability of demand and shift efficiency (match of operators to demand profile). Example levels observed in Orbita's previous experience by industry sector are approximately;

- Emergency services – 40%
- Public sector healthcare providers – 55% to 65%
- Financial services – 70% to 80%

6.3.3 Conclusion on operator costs

The analyses above have shown that the operator hourly rate paid by BT seems unreasonable and the number of hours required by BT seems also unreasonable. On the operator hourly rates, the reasonable rate should apply for June 2011 (last review of the CHF). On the number of hours, considering the fact that maintaining service targets and hence access to the public to the

999/112 service is of paramount importance and considering the fact that, even if using Orbita's alternative assumption is theoretically appropriate, it may be difficult to achieve these assumptions, TERA Consultants proposes to consider the average number of hours calculated using Orbita's alternative assumption and BT's assumption to calculate the CHF.

6.4 BT pay costs

6.4.1 BT Direct Labour Costs: Base

BT's Base labour cost is shared between staff who work 100% on ECAS and staff who do not work 100% of ECAS. BT's staff who work 100% on ECAS consist of various engineers and managers. The engineers within this group represent just under a third of full-time staff in Q4 2010/2011. The rest of the cost come from salaries to managers. There are many categories of managers:

- First Line Managers (FLM),
- ECAS Administrator,
- Emergency Services Liaison Manager,
- Policiy & Performance Manager,
- And ECAS Service Manager.

Among ECAS part-time staff, there are also many managers and some engineers.

Two main steps were taken to calculate the base of Direct Labour Costs: first a review of BT's accounts in the last three available quarters (Q2 - Q4 2010/2011) and its estimates of the following two quarters (Q1, Q2 2011/2012), then a forecast of future base labour costs.

The review of BT's accounts was qualitative and quantitative: each cost element was checked to verify if it is reasonable and/or necessary and cost accounting was also examined.

Based on an analysis of BT's account and communications with the operator, it appears that a number of staff positions have been phased out or are going to disappear by the end of the year 2011:

- First Line Manager (FLM): there were originally 9 FLM. The number of FLM has been reduced significantly as BT streamlined their operations and carry out cost-saving changes.

- Other managerial positions:

    - Policy & Performance Manager,

    - Emergency Services Liaison Manager,

    - Forecasting Manager,

    - Procedure Writer,

    - Call Centre Manager,

    - And Business Manager.

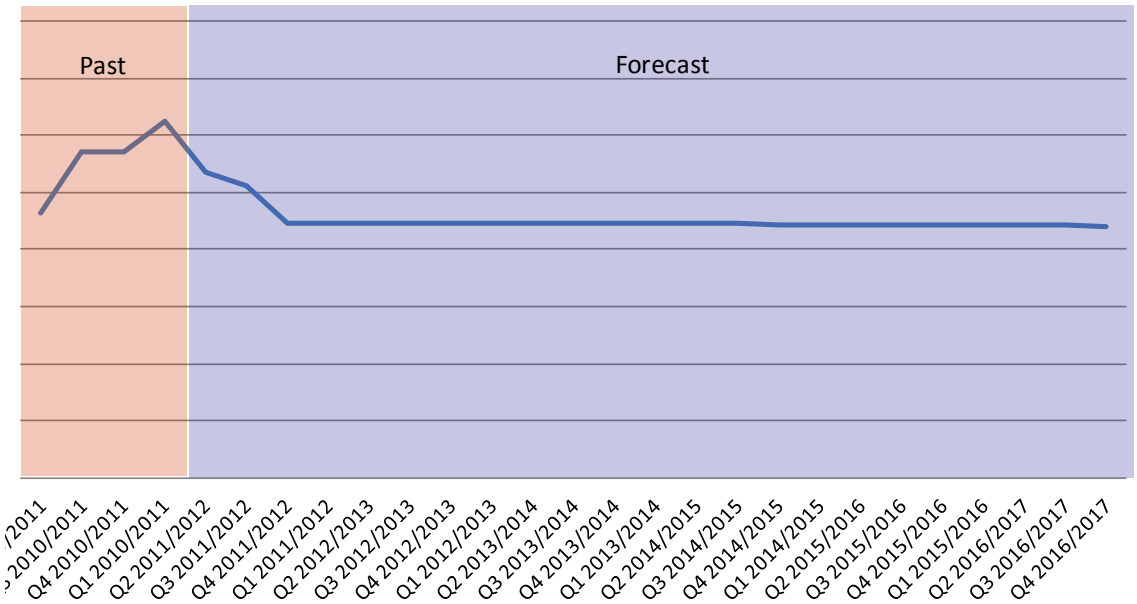
In further communication from BT,additional elements were outlined:

- Among staffs who work 100% on ECAS, there will be a new position “Head of ECAS operations” starting in July 2011, or Q2 2011/2012.

- Among staffs who do not work 100% on ECAS, there are seven positions that did not previously show up as cost elements in BT Direct Labour Cost-Base (Delivery Manager, Technical Implementer, Firewall Consultant, Voice Specialist, MIS Developer, TSG Engineer, and Security and Quality).

TERA Consultants is therefore of the view that these changes should be taken into account in the forecasts.

Figure 5 - Base labour cost evolution



Source: TERA Consultants' analysis on the basis of BT's data

One of the key questions that TERA considered is whether these costs should be disallowed in the past, considering the fact that if they are phased out today, they may have been unnecessary in the past. Discussions with BT showed that, when BT began the ECAS contract, it had to have all these roles in place. After the system was commissioned in October 2010 and after a few months of relatively stable operations, it became clear that some of these roles were no longer necessary as stand-alone roles and that they could be accommodated within the existing headcount. The process of phasing out these roles and transferring responsibilities took a number of months to complete. As a consequence, these costs do not appear unreasonable in this context. Also, TERA considers that these costs which were incurred at the beginning of the ECAS contract when BT did not have experience in ECAS provision were reasonable. Therefore, TERA does not propose to disallow the past corresponding costs.

It is to be noted that a mini operational review was completed by Orbita consultancy during this project (see section 6.11) which shows that the levels of BT management appears reasonable.

As for the accounting review of BT's accounts, two issues were analysed.

As stated in BT's document ECAS Quarterly Management Accounts 30 June 2011 - Expenses (Table 4) (thereafter ECAS QMA), BT's calculation of Q1 2011/2012 *"includes a charge of €67k re prior year for correction in daily rates as agreed in audit"*. Since this is a correction charge, it is not taken into account in Q1 2011/2012 as a cost element for CHF calculation but is included in the last three quarters between Q2 and Q4 of 2010/2011 by 9.1% each quarter.

Furthermore, it was found that an amount of €121k was taken from Q1 2011/2012 and moved to CAPEX Set-up cost. Also from table 4 of ECAS QMA, BT states that *"impact of increase in day rates on Q1 activity of €40k offset by transfer out of €121k to Deferred Set-Up costs"*.

6.4.2 BT Labour Costs: Direct Support

This category consists mainly of costs of the legal and finance teams:

- This includes members of the Irish Leadership Team, Legal and Regulatory staff,
- The finance team include the Finance Manager, Senior Finance Manager, Billing & Credit control etc.,
- Others include Procurement and Business Account Manager.

Two main steps are taken to calculate the Direct Support cost elements of Labour Costs: first a review of BT's accounts in the last three available quarters (Q2 - Q4 2010/2011) and its estimates of the following two quarters (Q1, Q2 2011/2012), then a forecast of future direct support labour costs.

This section includes important legal costs, which consists of the members of Irish Leadership Team, and legal and regulatory costs. Part of this is a one-off costs due to legal procedures with Telefonica starting in March 2011, or Q4 2010/2011.

BT also made it clear that its Q1 2011/2012 figure includes *"Higher cost due to time spent on May ComReg queries and Judicial Review"* and that *"Forecast include work on Judicial Review and August information request"* in the Table 4 of its ECAS QMA.

As the legal costs related to judicial review are not recognised for the provision of ECAS, they should be excluded from the calculation of the CHF. Therefore, TERA Consultants proposes to use costs of Q3 2010/2011 as a basis for

calculating future costs (because the judicial review began in Q4 2010/2011) on which wage inflation is applied.

6.4.3 BT Labour Costs: Other Support Functions

In its ECAS quarterly management accounts, BT adds a rate to its labour base costs (engineers, first line managers) to recover what is called "*other support function costs*". This is applied to the in-life costs and to the set up costs. BT explained that "*These costs relate to the other support functions including a logistics function (which handles the deployment of equipment over a four centre solution), time recording management function (handles the creation of Clarity project codes and the creation of standard monthly reporting), project delivery management function (handles the overall supervision of the delivery) and the management (a resource level of line management for all direct resources working on the project). All these activities are needed to ensure the successful delivery of the setup of the ECAS*."

As a consequence, these costs are related only to the setup of the ECAS and the rate should not be applied to in-life costs.

BT gave however three reasons to explain why the rate should still apply:

- BT explains that project delivery management function has continued at a significant level post the Set-Up period (Integration of Mast Information into ESC Application, Generation of Unique Manufactured CLI, Phase 1 ✂).

- There are still management (a resource level of line management) costs for all direct resources working on the project.

- BT incurs costs for the Network Management Centre and associated transmission field team.

TERA is of the view that while project delivery management costs may be relevant at some stage, they are one-off costs for projects that have been completed or about to be completed and should not be included in cost forecasts for next years. TERA is of the view that the rate should apply up to Q3 2011/12 but a reduced rate should apply.

It is to be noted that for these costs, as there is no automatic time recording of the corresponding staff, TERA is of the view that further analysis of the level of these costs should be completed by BT.

6.5 BT non pay costs

6.5.1 BT Labour Costs: Accommodation, etc.

This section is made of four different categories

- The first category is accommodation cost for ECAS staff that are identifiable from the organisational chart (made of third party costs and mobile costs).
- The second is for a number of engineers and managed services personnel at a lower cost per person and per day.
- The third cost category mainly relates to engineers (the cost is made of third party costs, mobile cost, accommodation cost, and computing).
- The last category is the accommodation cost allocated to Grand Canal and is applied to support staff only without the addition of other overheads.

In Q4 2010/2011, accommodation cost for engineers accounts for a half of total accommodation cost.

Like other cost assessment, two main steps are taken to calculate the Accommodation costs within Labour Costs: first a review of BT's accounts in the last three available quarters (Q2 - Q4 2010/2011) and its estimates of the following two quarters (Q1, Q2 2011/2012), then a forecast of future direct support labour costs.

Regarding BT's accounts in the three quarters between Q2 2010/2011 and Q4 2010/2011, there was miscalculation revision to forecasts of daily rates for mobile and computing costs. Indeed, BT's stated that its Q1 2011/2012 figure includes a *"€18k uplift re prior year for change in daily rates for mobile and computing costs agreed in audit*" (ECAS QMA). In order to have an appropriate level of accommodation costs, TERA proposes therefore to factor this €18,000 into the three quarter to take into account a correct daily rates for mobile and computing costs, which makes an additional 24% of cost to each previous three quarter. The total accommodation costs should as a result be higher for the three quarters between Q2 2010/2011 and Q4 2010/2011 and €18,000 lower for Q1 2011/2012.

As for BT's forecast of Q2 2011/2012, the total accommodation cost is of the same magnitude to that of Q1 2011/2012 including the one-off correction

charge. This is significantly higher than the average level of accommodation costs for previous quarters. When questioned about this issue, BT's agreed that its forecast of Q2 2011/2012 should be reduced.

For future costs, the average rate of accommodation labour costs out of BT labour costs is used to forecast.

6.5.2 BT Labour Costs: Third Party Costs

BT's third party costs incur as a result of payment for outsourcing Payroll and HR services.

While the cost of Q2 2010/2011 is high compared to other quarters, the costs of Q3 2010/2011 and Q1 2011/2012 are stable and therefore can be taken as a basis for forecasting. TERA Consultants proposes to take the quarterly average of this stable periods and the wage inflation to estimate future third party costs within BT's labour costs.

6.5.3 Other staff costs

Other staff costs consist of charges paid for hotels, mileage, and canteen. They are a very small share of BT's non pay costs. These types of costs vary between quarters, so the forecasts take into account the quarterly average of the annual cost, between Q2 2010/2011 and Q1 2011/2012.

6.5.4 Premises and related costs

Premises and related costs include the following cost items

- Electricity cost,
- Rents and rates of sites dedicated to ECAS at Navan and Ballyshannon,
- Facilities management charges: This incurs as a payment to sub-contractor ✂ who carry out the facility management at Navan and Ballyshannon.

The cost breakdowns by quarter and by items are given below based on BT's account.

Following review of Irish local data, the cost of electricity use, rents and rates are found to be reasonable. Their forecasts should be based on Q4 2010/2011 charges applying quarterly price increase in electricity and rents respectively.

Some issues were found with Facilities Management Charge by a sub-contractor. TERA is of the view that not all of the services charged by this sub-contractor to ECAS are reasonable or necessary.

It is therefore proposed to exclude the unnecessary costs within BT's contract with its sub-contractor. Cost forecast for Premises and related costs should take into account the changes accordingly and using the appropriate annual price increase for each item.

TERA Consultants further notes that BT did not undertake separate tenders for these two sites as it was of the view that value for money was being obtained through its existing contracts with ✂. In particular, TERA notes that many of BT's buildings in Ireland are in large urban centres (i.e. Grand Canal Plaza and City West). It is appears that these urban centres do not represent the location or type of building where the call centres are based. It is possible that better value for money might be obtained for many of the services by sourcing them locally.

6.5.5 Maintenance Costs

Maintenance is outsourced to sub-contractors

When analysing the total maintenance cost quarter by quarter, it is worth noting that the total cost given by BT for Q1 2011/2012 is significantly lower. This is because BT has moved €55k from this quarter to deferred set-up cost, as stated in their ECAS QMA.

Regarding forecasts, it is proposed to take BT's estimate for Q2 2011/2012 as the basis then apply quarterly wage inflation rate to obtain the future costs of maintenance.

6.5.6 Administration costs

Administration costs represent the charge paid to auditors of BT's accounts. This fluctuates between quarters due to the fact that related activities do not occur regularly over a given year, forecasts therefore take into account the quarterly average of the annual cost (between Q2 2010/2011 and Q1 2011/2012).

6.5.7 Network Services

BT incurs network costs for the provision of ECAS services. These network costs are mainly made of:

- Leased Line costs (STM1 provided by BT, ✂, ✂or ✂),
- Interconnect costs,
- Data centre costs.

These types of costs make 90% of network services (other costs are mast rental).It has been verified that these costs are reasonable.

Leased lines costs have been assessed on the basis of Eircom's leased line reference offer which is publicly available[35]. This enables:

1. To check the amount paid to Eircom.
2. To verify that the amount paid to BT (internal), ✂and ✂is in line with or below Eircom's prices, which would then mean that these costs are reasonable.

Nine wired connections (excluding wireless connections) are therefore necessary in this network:

- Between Navan and Ballymount (provided by ✂),
- Between Navan and Navan's MAN,
- Between Ballyshannon and Citywest,
- Between Sligo and Citywest,
- Between Eastpoint and Citywest,

[35] Eircom Network Price List (formerly the eircom RIO Network Price List), version 4.7, page 27

- Between Eastpoint and Dundrum,
- Between Citywest and Dundrum,
- Between Citywest and Riverhouse.

Considering the crow-fly distance between Navan and Ballymount, Eircom's price list enables to calculate the cost incurred by BT for this connection. This is €✂k per quarter, which is line with what BT is currently paying. It is to be noted that Eircom's prices have decreased from the 1st of July 2011 which decreases the cost by €✂ per quarter.

Table 10 – Charges paid by BT to Eircom for the PPC between Navan and Ballymount

	Local End	MLA	MLD below 20 km	MLD after	Distance	Total per quarter
STM1 Before July 2011	14 305	4 905	1 067	359	55	**13 279**
	Local End	**MLA**	**MLD below 30 km**	**MLD after**	**Distance**	**Total**
STM1 After July 2011	8 259	4 905	964	359	55	**12 765**

Source: TERA Consultants

For other leased line costs which amount to €✂k per quarter, costs incurred by BT are lower than the charges that BT would have paid if it had used Eircom's offer. They appear therefore reasonable (see below).

Table 11 - Charges that would have been paid by BT if it was using Eircom's offer to connect other sites

End A	End B	km	Price per quarter (based on eircom)
Ballyshannon	Citywest	200	25 779
Sligo	Citywest	150	21 291
Citywest	Dundrum	15	6 906
Citywest	Riverhouse	15	6 293
Eastpoint	Dundrum	5	4 496
Eastpoint	Citywest	20	8 111
Navan	Navan	0	2 678
			75 553

Source: TERA Consultants

It is to be noted that ✂'s charges have decreased in Q4 2010/2011.

About data centre costs, BT is supporting costs for 4 racks to the ECAS. The amount can be compared to Eircom's prices for physical co-location which are publicly available in Eircom's Access Reference Offer Price List[36]. A comparison between BT data centre cost and Eircom's costs for exchanges located in the Dublin area show that BT Data centre costs are reasonable.

About interconnect costs, BT pays for the fixed termination charges to emergency services (An Garda Siochana, Ambulance etc.) for connected calls. This charge is proportional to the number of calls. Charges for fixed termination are published by Eircom[37] and have decreased from the 1st of January 2011 (between 6% and 12% depending on the level of interconnection).

Table 12 - Rates for termination on fixed networks in 2010 and in 2011

		Cent per minute			Cent per call			
		Peak	Off-peak	week-end	Peak	Off-peak	week-end	
Primary	Old (2010)	0,2788	0,1541	0,1352	0,7409	0,4102	0,3591	
	New (2011)	0,2626	0,1451	0,1273	0,6978	0,3863	0,3382	-6%
Tandem	Old (2010)	0,4209	0,2325	0,2041	0,837	0,4632	0,4055	
	New (2011)	0,3818	0,2109	0,1851	0,774	0,4283	0,375	-8%
Double tandem	Old (2010)	0,6046	0,3344	0,2931	0,9171	0,5076	0,4446	
	New (2011)	0,5222	0,2888	0,2531	0,8152	0,4512	0,3952	-12%

Source: Eircom's reference offer

This decrease is observed in the charge per call paid by BT in January 2011 compared to December 2010.

Table 13 - Charge per call supported by BT to terminate calls to emergency services

Month	*Year*	Interconnect charges	Connected calls	ct per call
November	2010	1 898	72 527	2,6170
December	2010	2 422	86 567	**2,7978**
January	2011	1 994	75 175	**2,6525**
February	2011	1 875	71 308	2,6295
March	2011	2 031	78 740	2,5794

Source: TERA Consultants

[36] Eircom Access Reference Offer Price List v5.5

[37] Eircom Reference Interconnect Offer Price List v2.57

For the future interconnect charges, TERA Consultants has considered the latest termination rates of 2011..

6.5.8 Lease Interest

BT entered into two financing arrangements during the implementation phase of ECAS with suppliers and is paying lease interests.

These lease interests correspond to the financial costs related to the investment made for the fit-out of the Navan premises and for the kit for the equipment centres and associated maintenance. By having these financing agreements, BT should request less cash from its shareholders or bank. However, these investments are present in the set-up costs and fixed assets and the financial costs related to these investments (cost of interests to be paid to the bank or to the shareholders) are supposed to be recovered by the cost of capital. If these costs were included in the calculation of the CHF, then financial costs would be double counted: a first time in the lease interest and a second time in the cost of capital.

TERA Consultants is therefore of the view that these costs should be disallowed and this has been accepted by BT.

6.6 Depreciation

6.6.1 Fixed assets

Fixed assets are necessary for the provision of ECAS. Costs incurred by fixed assets include those of

- Hardware
- Fit out Ballyshannon and Navan
- Fit out Eastpoint
- WAN
- ECAS call handling platform
- And Software and Testing

These costs are one-off costs that should be depreciated over the life of the contract. They were analysed last year by ComReg and its consultants and were found to be reasonable[38].

6.6.2 Set-up costs

Set-up costs incur as BT made expenses to set up the new work centres for ECAS provision. In theory, set-up costs are only incurred at the first phase of ECAS operation.

It is observed that the set-up costs phase out gradually until Q4 2010/2011. In Q1 2011/2012, some set-up costs come up again, contrary to the expectation that set-up costs should only incur at the beginning of ECAS operation. These are explained by BT to be *"re-allocations between In-Life and Set-up costs which were agreed during the audit"*, which are discussed earlier during analysis of BT pay costs and BT non-pay costs (sections 6.5 and 6.5 respectively). This move only impacts the calculation of cost of capital (see the next section, section 6.7)

In their analysis[39] of BT's account in 2010, HBC assessed some costs as being unnecessary within this category which amounted to €232k. These costs appear to be in BT's account in the ECAS QMA. TERA Consultants is therefore of the view that this amount should be excluded again from CHF calculation.

6.7 Financial costs

6.7.1 Cost of capital

The cost of capital is the guaranteed rate of return which level is determined in Schedule 22 part 4 of the Concession Agreement. It is equal to 6.63% and should be applied every year to the Gross Book Value of fixed assets and set up costs related to ECAS[40].

[38] See HBC, Final report to ComReg on Emergency Call Answering Service – Call Handling Fee Review, 17th of December 2010.

[39] Final report to ComReg re ECAS fee review, 17 December 2010.

[40] This is different from traditional approaches to calculate cost of capital where cost of capital is generally calculated as a percentage of the Net Book Value.

6.7.2 Fund

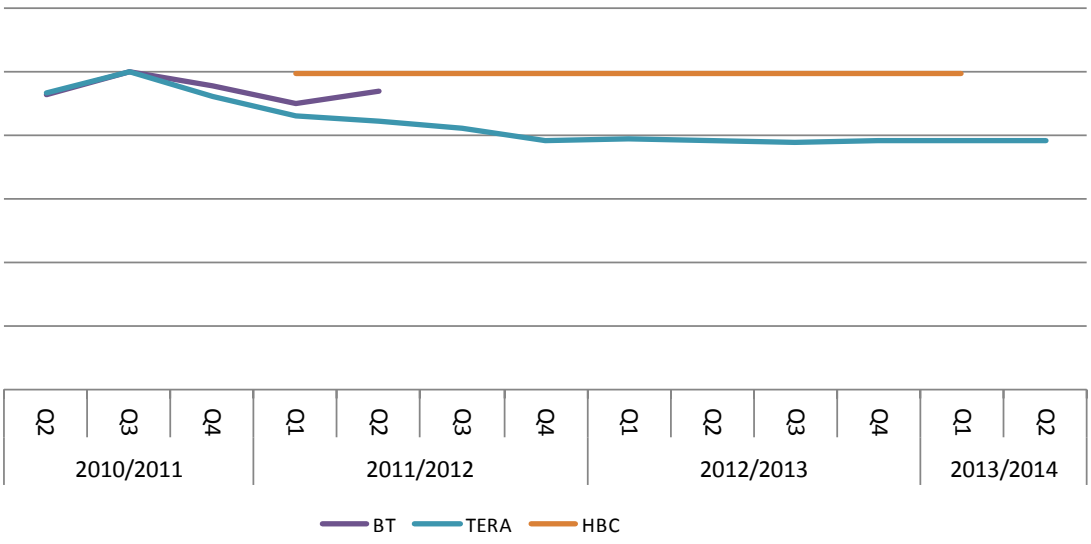
The Sinking Fund is designed to accumulate, over the term of the ECAS contract, sufficient funds to cover the loss or gains from BT if revenues from the CHF are below or above reasonable costs incurred by BT (including cost of capital).

The Concession Agreement stipulates that the cost of this fund must be recovered by the CHF. The cost of this fund is €250,000 per annum for BT.

6.8 Sum of costs

Considering all the costs incurred by BT and discussed above, it is possible to determine the total level of costs per quarter which BT should be allowed to recover through the CHF:

Figure 6 – Evolution of ECAS costs (excluding under recovery) using BT estimates, HBC estimates and TERA estimates



Source: TERA Consultants

The total level of costs per quarter which BT should be allowed to recover through the CHF is around €✂M per quarter, i.e. €✂M per annum which is €✂M lower per quarter than what was planned in HBC report. The main reasons for the increase in the difference between HBC and TERA are:

- The lower number of calls in reality compared to HBC forecast which reduces the number of operator hours (see section 6.2);

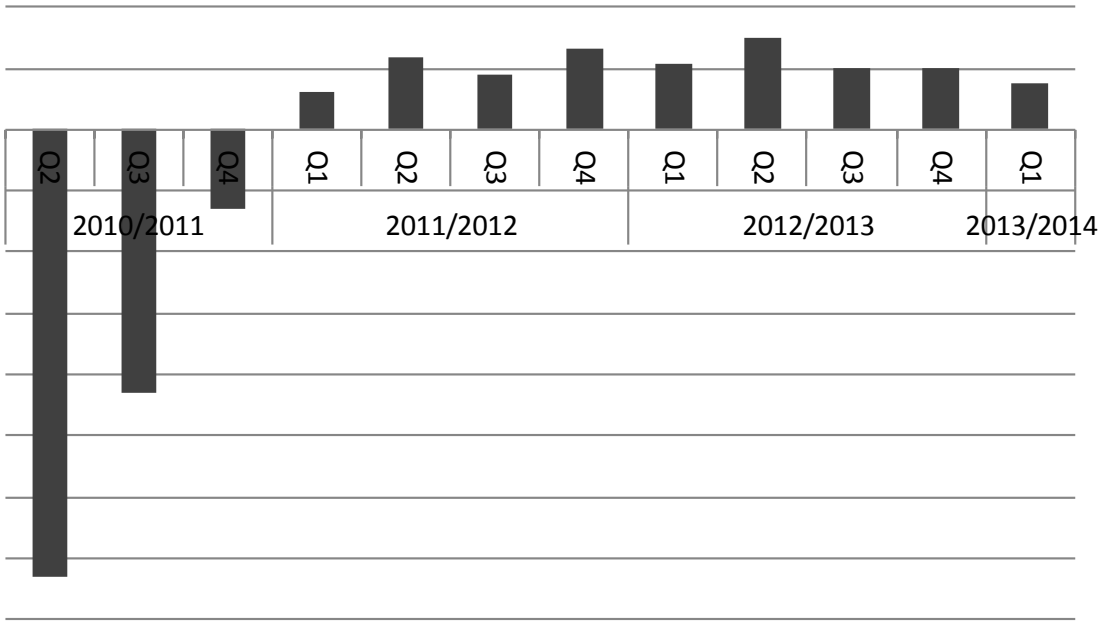
- The lower hourly rate applied for the operators' sub contractor (see section 6.2);
- The lower number of man-hours required from the sub-contractor's operators that can supply the same level of service (see section 6.3.2);
- The decrease in the number of management staff completed in 2011 (see section 6.4) ;
- The disallowance of some facilities management costs (see section 6.5.4);
- The disallowance of other support function costs (see 6.4.3).

6.9 Under recovery

The potential under recovery is calculated by comparing the costs incurred by BT and considered reasonable (see above) to the revenues perceived by BT in the past or that would be perceived in the future considering volume of call forecasts and the new CHF that will apply from the 12 February 2012.

While BT was under recovering its costs during the year 2010/2011, the new CHF of €3.35 enables BT to over recover its costs on a quarterly basis.

Figure 7 – Under/over recovery on a quarterly basis assuming same CHF as today



Source: TERA Consultants

In order to make sure that BT is exactly recovering its reasonable costs incurred for the provision of ECAS over the contract period, the sum of discounted profits and losses of each quarter must be equal to 0 at the end of the contract period. Such a calculation is therefore carried out to set the CHF that enables BT to recover its costs over the full contract period (including interests and past under recoveries).

On the basis of volumes of calls estimated in section 6.2 and of costs estimated in sections 6.4, 6.5, 6.6, 6.6.2, 6.7 and 6.7.2, **the level of CHF that enables BT to recover its reasonable costs for the provision of ECAS is 3.35 €/call.** As explained in previous sections, this value includes many conservative assumptions to avoid any sharp increase of the CHF in the future.

6.10 Sensitivity analyses

Many assumptions have been used in the previous sections and TERA Consultants completes here sensitivity analyses on key parameters:

- Sensitivity analysis n°1 aims to calculate the CHF if BT other support costs are not disallowed after Q3 2011/12 as explained in section 6.4.3,

- Sensitivity analysis n°2 aims to calculate the CHF if BT facilities management costs are not disallowed as explained in section 6.5.4,

- Sensitivity analysis n°3 aims to calculate the CHF if BT's calculation to calculate the required number of hours is modified and Orbita's alternative assumption is preferred as explained in section 6.3.2,

- Sensitivity analysis n°4 aims to calculate the CHF if BT's calculation to calculate the required number of hours is modified and an average of Orbita's alternative assumption and BT's assumption is preferred as explained in section 6.3.2,

- Sensitivity analysis n°5 aims to calculate the CHF if BT's contract duration is extended from 5 to 7 years. Assessing the level of the CHF in case the contract duration is extended from 5 to 7 years can therefore provide useful insights.

- Sensitivity analysis n°6 aims to calculate the CHF if the sub-contractor's charge per hour is used rather the reasonable charge calculated by TERA (see section 6.3.1)

- Sensitivity analysis n°7 aims to calculate the CHF if the number of calls decreases more over the period (-5% per annum instead of -3.5%).

- Sensitivity analysis n°8 aims to calculate the CHF if the number of calls does not decrease over the period (0% per annum instead of -3.5%).

Table 14 - Results of the sensitivity analyses

Sensitivity analysis	CHF base (€/call)	New CHF (€/call)	% change
#1- Other support functions	3.35	✂	✂%
#2- Facilities management	3.35	✂	✂%
#3- Number of hours calculated based on Orbita's alternative assumptions	3.35	✂	✂%
#4- Number of hours calculated based on BT's assumptions	3.35	✂	✂%
#5- Contract duration changed from 5 to 7 years	3.35	✂	✂%

#6- The sub-contractor hourly rate	3.35	✂	✂%
#7- Number of calls decreases	3.35	✂	✂%
#8- Number of calls stable	3.35	✂	✂%

Source: TERA Consultants

6.11 Mini-operational review

To supplement the study on staffing levels in the ECAS operation, a short operational review was completed. The purpose of the review was to enhance understanding of the operational structure, performance management and staff management processes given the strict service standards that have to be met.

The review was completed on 19 and 20 September when visits were made to the centres at Eastpoint, Navan and Ballyshannon. During these visits a small number of calls were listened to by two consultants from Orbita and interviews were completed with managers and support staff.

Given the short time for the review, observations are based on answers to questions asked during the interviews.

6.11.1 Organisational Structure

The ECAS operation consists of 3 centres with c80 operators on a part-time and full time basis.

The call answering operators are employed by the sub-contractor. The sub-contractor is required to provide the staffing hours for each period of the day identified by the call demand forecast. The sub-contractor has a full-time co-ordinator in each of the centres.

In addition, as BT has responsibility for the overall service performance, there is a BT management presence within each of the centres. Each centre has two First Line Managers (FLMs). The FLMs work within a designated centre, but their rotas take into consideration the level of FLM cover across all three centres.

Given the presence of the two organisations within the centres, staffs are managed along the following lines:

- Performance management; including quality, call handling times and adherence statistics is managed by the FLM.
- Human Resource type issues; such as booking holidays, absence and issues with rotas are managed by the sub-contractor on-site co-ordinator.

It is apparent that the FLMs and on-site co-ordinators work closely together to provide a co-ordinated approach.

In addition to these roles, each centre has operators who are accredited to act as Lead Operator.

Navan is the lead centre and additional duties are carried out from there. The organisational structure in Navan is the same as that in the other two centres except that the Navan centre has two administration staff who are BT employees.

An outline of each role is provided in the following paragraphs.

6.11.1.1 First Line Manager (FLM)

In each of the three centres, a FLM was interviewed and the details of their role discussed. The responsibilities of the FLM identified from the interviews include:

- Achieving the overall service performance,
- Overseeing the performance and quality of work for approximately ✂ designated operators within their centre,
- Completing call monitoring and feeding back to staff,
- Completing interim and final end of year performance appraisals for staff,
- Playing a key part in the implementation of service escalation plans if they need to be put into place,
- Preparing reports and managing the adherence log,
- Working alongside the sub-contractor onsite co-ordinator on staff issues if there are both performance and Human Resource type issues (such as high absence) apparent.

In the interviews FLMs were asked how they split their working week. The feedback was as follows:

- FLM (Eastpoint):
    - Call Monitoring and feedback 60%,
    - Training 10%,
    - Reporting and sundry duties 30%
- FLM (Navan):
    - Call monitoring and feedback 40%,
    - Lead Operation 20%,
    - Adherence and monitoring the control desk 20%,
    - Reporting and sundry duties 20%
- FLM (Ballyshannon):
    - Call Monitoring and feedback 60%,
    - Day-to-day control 20%
    - Reporting and sundry duties 20%.

The FLM is clearly a key role in managing the service performance, quality and productivity of the centre. Orbita would add the following comments:

- The ratio of one FLM to ✂ operators is, in our view, appropriate in this environment and allows a high degree of coaching and one-to-one development. In our experience, contact centres often aim for a ratio of between 1:✂ and 1:✂ operators to a first line manager,
- One of the prime responsibilities of the FLM is to maximise the performance and productivity of the operators through coaching and feedback. In our view, this is best practice and is appropriate for this environment where a high degree of accuracy and speed are required,
- FLMs have clearly defined responsibilities and accountabilities and, again, this matches best practice.

6.11.1.2 The sub-contractor Co-ordinator

There is a sub-contractor's on-site co-ordinator in each centre. It was only possible during the period of the review to meet with one of the three co-ordinators.

The role of the on-site co-ordinator, as discussed during the interview, includes:

- Checking the rotas for the centre staff once they are prepared,
- Dealing with any staff queries about future rotas and facilitating compromise solutions if staff need to change the hours they are down to work,
- Assisting with recruitment activities when required,
- Dealing with staff absence including absence monitoring and back-to-work interviews when staff return to the office. Ensuring adherence to the absence policy,
- Dealing with sundry staff issues such as holiday requests and lateness,
- Completing exit interviews with staff who are leaving the organisation,
- Undertaking on-call duties.

One of the co-ordinators is on call and this is a key element of the role. When they are on-call, the co-ordinator has responsibility for dealing with any resourcing issues that arise on a day-to-day basis across all three of the centres. For example, a staff member may call in sick at one of the centres. The on call co-ordinator will then arrange for that staff member to be covered. They do this by bringing in another operator (operators also have on call obligations and must come in if called to cover a colleague).

In a meeting with the sub-contractor co-ordinator in Ballyshannon, the following feedback was obtained on the time spent on each aspect of the role:

- Dealing with staff rota issues 50%
- Dealing with general people issues; including staff absence 5%
- Undertaking on call duties 5%
- Attending meetings, preparing reports and dealing with sundry duties including pay issues 40%.

The role that the co-ordinator undertakes ensures that the FLM is able to concentrate on the overall performance of the service and individual staff performance. Orbita would add the following comments:

- The role ensures that staff absence is dealt with consistently in line with an absence policy. In addition, back to work interviews are carried out in a consistent manner. In our experience these are best practices to manage absence levels,

- Operators have a local point of contact to discuss rota issues and have these resolved effectively,
- Given that a great deal of the co-ordinator role is done face-to-face with staff, any reduction in numbers of this role would mean the remaining co-ordinators would have to travel regularly to other centres. This would be time consuming given the geography of the locations.

6.11.1.3 Lead Operator

Ten staff are trained to be Lead Operators in each centre.

The Lead Operator role is to take responsibility for their centre when there is no FLM available. It does not follow that if the FLM is away in one of the centres, the Lead Operator in that centre will be taken away from telephone answering duties. This will only happen if there is a particular issue to deal within the centre or across the centres.

This position is different in Navan which is the lead centre. When the FLM is absent, the Lead Operator will come off the telephone as there is a control desk in Navan which needs to be manned. Control desk duties include overseeing any issues with call answering performance in emergency service control rooms and monitoring overall performance and related issues.

Lead Operators may be in charge of the centre in the middle of the night; however, there is always an FLM on call.

Orbita would make the following observations:

- The position of Lead Operator is a logical resolution for dealing with any issues that arise outside of the hours covered by the FLM's or when they are unavailable to manage the team.
- The current levels of operator resource contingency enable Lead Operators to stop taking calls without threat to service level targets.

6.11.1.4 Administrator (Navan only)

Within the Navan centre there are two administrators who are BT employees. The roles of the administrators include:

- Independent call monitoring of all staff across the centres on a weekly basis,
- System administration duties; including setting up new users on the system,

- Facilities management duties for the Navan premises,
- Completing the daily reports that are required by various stakeholders (for example, reports showing the number of calls originated by children which is required by the Garda).

The administrators in Navan complete call monitoring in addition to that completed by the FLMs locally. There is a contractual requirement that focuses on call quality and the quality levels achieved are reported externally. Administrators monitor two calls per operator across all centres for this purpose. It is also the practice to give staff a small bonus depending on the results of the call monitoring undertaken by the administrators.

With respect to the other duties performed by the administrators, systems administration is often completed by a central IT support team in other operations. Whilst Orbita did not look at any of the reports produced by the team, consideration could be given to see if any can be further automated if there is a large degree of manual intervention.

Orbita would make the following comments:

- The independent assessment of calls by the administrators is an advantage, as it provides a very objective view of performance
- The type and number of admin activities that were described as being undertaken make the provision of the admin function appear reasonable. The alternative would be to incorporate the tasks into the FLM's responsibilities which would detract them from performance management activities.

6.11.2 Performance Management

Operators receive regular one-to-ones, coaching feedback sessions, interim and final performance reviews. These are completed by the FLMs.

A core part of the performance management process is call monitoring and feedback which is undertaken with all staff. The FLMs complete monitoring on at least 10 calls per week per staff member and give feedback. If there is a need, more calls are monitored by the FLM for specific staff members.

At one-to-one meetings with staff, other objectives are discussed; including call handling times (the call handling target is 36 seconds) and adherence measures (5% not ready target, excluding lunches and scheduled breaks). Development goals are agreed at meetings for the next periods.

In addition, the administrators based in Navan monitor two calls per member of staff each week as discussed in Section 6.11.1.

Call monitoring levelling sessions are held bi-weekly. In these sessions, which are attended by FLMs and the administrators at Navan, calls are listened to and each party marks it independently. Any difference in marking are then discussed to ensure consistency of approach.

Orbita would make the following comments about the performance management processes in place:

- In our view there is a number of best practice characteristics exhibited in the approach to call monitoring. These include regular feedback for all staff and further coaching for lower performing operators, call levelling sessions to ensure consistency and a standard approach to documenting the outputs from the call monitoring.
- In our experience the number of calls monitored differs between organisations depending on the nature of the calls. However, Orbita do not believe that the number of calls monitored is unreasonable given the nature of the calls received.

6.11.3 Recruitment, Selection and Staff Pay Rates

Recruitment of staff is the responsibility of the operator sub-contractor. A detailed examination was not undertaken of recruitment and selection processes and the information detailed below was gathered through the interviews held in the centres.

The main method for sourcing candidates includes the use of job web sites and local advertising, where appropriate. There are no current issues being faced in sourcing sufficient candidates for operator roles. Candidates are required to undertake telephone screening, an online assessment, psychometric testing and a competency based interview during the selection process.

Staff are paid an annual salary of approximately €20, 000 and this is consistent across the three centres.

While no analysis was undertaken of the selection methods used by the sub-contractor, FLMs indicated that the quality of staff coming into induction training is high and that they have no issues in this area.

Staff receive full contract information before joining ECAS. References are completed by the sub-contractor as employer. However, security vetting through the Garda is administered by the BT administration staff in Navan. No member of staff is allowed to take a call until the security vetting is completed. New starters have a three-month probationary period.

Orbita believe that there are a number of best practices in recruitment and selection of staff from the information gathered, including:

- A variety of selection methods is being used to test candidates against role requirements,
- References and checks are completed before staffs are allowed to take phone calls.

With respect to operator salary levels recent information from the CCMA Ireland Limited indicates that the following salary levels are being paid in the local contact centre industry, which is in line with ECAS staff wages.

Table 15 - Local averages for Operator salaries

Language skills and tenure	Average salary	Average bonus
English speaking only (less than 3 year's tenure)	€21,545	6%
Multi-lingual (less than 3 year's tenure)	€22,478	8.5%
English speaking only (more than 3 year's tenure)	€23,298	7%
Multi-lingual (more than 3 year's tenure)	€24,034	8.5%

Source: Research conducted for CCMA Ireland Limited by Amarach Research September 2011

6.11.4 Staff Training

Induction training is provided by the sub-contractor trainers. New starters receive a two-week induction training course. The induction training programme is documented and the contents have been agreed with BT.

The induction training covers: operator processes, geography of the country, understanding of the emergency services, behavioural training, assertiveness and performance management processes.

Following the initial two-week induction programme, there is a further week when the new starter is in Grad Bay (this is a contact centre term to indicate that new starters are still in the training environment but are making the transition to the live environment). While in Grad Bay the new starters are under the control of the FLM. It is in this environment that they start to take their initial calls under close monitoring.

Most new starters remain in Grad Bay for one-week, although it is possible that some staff will be given further time before moving to the live environment.

New starters have trajectory targets – for example, they are given a longer call handling time as they move into the live environment (56 seconds).

There is evidence that the progress of new starters is monitored closely in their induction period. There are processes in place for any areas of development to be recorded for individual staff members and passed between the trainer and FLM for further monitoring.

Training facilities look fit for purpose and there are areas where new starters can take calls away from the live operators.

In our view, there are a number of best practices evidenced in the way the induction of staff is undertaken. Particular areas include that induction training is documented, delivered by designated trainers and that there are different targets in place for new staff.

There are two kinds of ‘ongoing’ training for experienced advisors. Performance development training is identified through the call monitoring and interim review processes. In these cases, the FLMs will take responsibility for identifying the training need, developing and delivering suitable training. They will then take staff members off the telephone for training in line with time that has been scheduled.

Other on-going training, such as mandatory employee type training (for example, first aid training) is the responsibility of the sub-contractor as employees of the staff and they undertake this type of training. This is in line with Orbita’s experience of how other 3rd party resource providers operate, they are expected to be responsible for HR related issues and mandatory training, with the client undertaking job specific coaching and development.

6.11.5 Absence and Attrition

There is evidence in place that staff absence management policies are in operation across the centres. They are implemented by the sub-contractor co-

ordinator. Orbita understand that initially staff absence levels were higher than the current rate which is below 5%, and this figure is below the levels we normally see in contact centre operations.

Orbita also understand that attrition levels were initially quite high, between 30% and 40%, but have been running below 5% in recent months. Again the current lower figure is below the levels we normally see in contact centre operations, our experience with recent outsourced clients showed an attrition level of over 25% based on a full year, whereas recent public sector clients have demonstrated levels below 10% per annum. If attrition stays at the current level, then rolling annual averages should continue to reduce, converging on the prevailing level when a year has elapsed.