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Executive
Summary

Executive Summary

Introduction

We have carried out a valuation of The Pension and Grants Fund of the Personnel of Cyprus Telecommunications Authority (CYTA) ("the Fund"). The valuation date is **31 December 2018**. The main purposes of the actuarial valuation are to investigate the current financial position of the Fund and to recommend the rates of contributions payable to the Fund in the future.

Results & Conclusions

- On the basis of the long-term assumptions there was, at the valuation date, a funding deficit of **€141.335.370**, which corresponded to a ratio of actual asset value to target asset value being funded for past service benefits (the funding target ratio) of **80,5%**.

Future Service funding cost recommendations:

- On the new valuation results as at 31 December 2018, the rate that is expected to be sufficient to cover the cost of future service accrual is **14,0%** of pensionable salary.
- Allowing for employee contributions of 5%, the Standard Contribution Rate paid by CYTA should be revised to **9,0%** of Payroll.
- The above rates ignore the past-service deficit.

Recovery Plan for Deficit repair contributions:

- To eliminate the funding shortfall, the trustees and the Employer need to agree the **level** and **type** of additional contributions (i.e. contributions over and above those needed to cover benefits being earned in the future) that will be paid into the Scheme.
- The trustees together with the Employer also need to agree the **period** over which the funding objective should be met.
- The trustees have decided to finance the past service deficit as follows:
 - An immediate lump sum deficit contribution of **€25,0 million**.
 - An annual deficit contribution of **€19,6 million** over a period of **6,25 years**.
- The Recovery Plan should be submitted to the Regulator for approval.

Investment Policy Recommendations

- The Trustees should ensure that their approved long-term Investment Strategic Allocation is implemented in the near future to ensure alignment of the funding and investment objectives.
- Further, the level of mismatching between Assets and Liabilities should be closely monitored against the risk that rates stay lower for longer.

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Main Report



1.Introduction

Overview	This report sets out the results of our actuarial valuation of The Pension and Grants Fund of the Personnel of Cyprus Telecommunications Authority (the Fund) as at 31 December 2018 .
Funding objective	The recommendations in this report are designed to bring the Fund's assets into line with its funding target , as discussed in the next section.
Benefit structure	<p>The actuarial valuation is based on the benefits as defined in the Fund's legal documents at the valuation date.</p> <p>A summary of these benefits is set out in Appendix 1.</p>
A snapshot view	This report concentrates on the Fund's funding position at the valuation date. As time moves on, the Fund's finances will fluctuate. It will therefore be necessary to carry out further valuations to monitor the position. In the meantime, if you are reading this report some time after it was prepared, you should bear in mind that the Fund's funding position could have changed significantly.
Previous valuation	<p>The results of the previous valuation as at 31 December 2017 showed:</p> <ul style="list-style-type: none">■ A funding deficit of EUR 140.311.986.■ A funding target ratio of 80,9%.■ A recommended company contribution rate of 11,0% of pay.■ The trustees together with the Employer have decided to finance the past service deficit over a 7,5 year period, assuming a return on assets of 4,50% p.a. (i.e. annual deficit contribution of EUR 19,6 million p.a.).

2.Principles of Funding

Pensions vocabulary Law 208(l) 2012 introduced some pensions terms, including the concept of technical provisions.
Here is a summary of the main terms now in use, further details are set out in the Glossary:

Technical Provisions	The target level of assets that the Trustees following consultation with the Employer decide is appropriate to meet promised benefits.
Funding Objective	To hold sufficient and appropriate assets to meet the technical provisions .
Funding Principles	A set of principle for meeting the Funding Objective .
Recovery Plan	A document summarising a plan of action for correcting a shortfall over an agreed period.
Schedule of Contributions	A schedule setting out what contributions are payable, and when.

Principles of Funding The Trustees and Company are required to agree on three principles:

Principle 1:

What technical provisions to target?

To calculate the **technical provisions**:

- For each year into the future, the benefits paid out by the Scheme are estimated. This is generally considered in real terms for the majority of cashflows, which are linked to inflation.
- A target level of assets is agreed on, that is appropriate to meet the expected benefit payments. The conventional approach here is to 'discount back' the expected benefit payments to the valuation date, using an agreed rate of interest known as the **discount rate**.

These 2 steps require a chosen method and assumptions (e.g. how long members live) in order to arrive at a value for the **technical provisions**.

Principle 2:

What contributions to pay for future benefits?

There are several funding methods recognised by the actuarial profession. These result in different calculations of the cost of new final salary benefits.

Principle 3:

How to address any shortfall?

A decision must be taken on how any **shortfall** is addressed.

Purpose of funding

The primary purpose of funding is to provide members with more security for their pensions than if they relied on their employer to pay them directly.

Setting the funding objective

Several factors should be taken into account to set the funding objective:

- The purpose of funding the Fund.
 - An acceptable level of risk.
 - The requirements of the Fund's Trust Deed and Rules.
-

Legal Requirements

As per the requirements of Law 208(l) 2012:

- *The calculation of the technical provisions shall be executed and certified by an actuary or, if not by an actuary, by another specialist in this field, including an auditor, according to national legislation, on the basis of actuarial methods recognised by the competent authorities of the home Member State, according to the following principles:*
 - *(a) the minimum amount of the technical provisions shall be calculated by a sufficiently prudent actuarial valuation, taking account of all commitments for benefits and for contributions in accordance with the pension arrangements of the institution. It must be sufficient both for pensions and benefits already in payment to beneficiaries to continue to be paid, and to reflect the commitments which arise out of members' accrued pension rights. The economic and actuarial assumptions chosen for the valuation of the liabilities shall also be chosen prudently taking account, if applicable, of an appropriate margin for adverse deviation;*
 - *(b) the maximum rates of interest used shall be chosen prudently and determined in accordance with any relevant rules of the home Member State. These prudent rates of interest shall be determined by taking into account:*
 - *the yield on the corresponding assets held by the institution and the future investment returns and/or*
 - *the market yields of high-quality or government bonds;*
-

The agreed funding target / technical provisions

Pension fund liabilities are a series of future cash payments. Other than immediate and deferred annuities provided by an insurance company, the assets that would provide the closest match to these cash flows are bonds of governments from the same area as the liability payments. Hence a **funding target** could be equal to the **present value** of the expected payments discounted at the market yields on government bonds of appropriate term. The expected payments for active members would relate to pensionable service up to the valuation date and would include an allowance for expected future increases to the Pensionable Salary.

The **funding target** could be calculated using the approach described

above. However, it is common for funded occupational pension funds to hold assets less than the full amount of the liabilities valued in this way. Instead, the Company will set a **funding target** at a lower level.

The Trustees of the Scheme have decided to set the discount rate by reference to the single "spot" yield on the AAA-rated euro area central government bonds yield curve at the duration of the liabilities (i.e. 15 years), plus a margin of 230bps to allow for future expected returns of the current investment strategy.

As such, the discount rate is set at **2,90% pa**.

The methodology of setting the discount rate is described in detail in **Appendix 2**.

The **funding target** is therefore calculated as the **present value** of the expected payments (as described above) discounted at the rate derived above. It should be noted that neither investing in assets with a higher expected return nor lowering the **funding target** reduces the cost of providing the promised benefits. Such assets bear a higher risk of under-performance which balances the higher expected returns. Other things being equal, if the **funding target** is lower, the Company will pay:

- Lower contributions in the short term; but
- Higher contributions (than would otherwise be payable) thereafter.

Speed of reaching funding target

An adjustment to the contribution rate will be needed to eliminate a **funding surplus** or a **funding deficit** over an agreed period of time. The overall contribution rate may allow for the amortisation of any past service surplus or deficit over the future working lifetime of the current active members.

The Trustees can follow a faster method of recognizing the surplus or deficit if this is required.

Stability of contribution rate

The contribution rate will remain stable before and after eliminating a **funding surplus** or a **funding deficit** if the funding objective remains unchanged and all assumptions made are borne out in practice. If the funding objective changes, then contribution rates are likely to change.

3. Membership data

Introduction

Cyprus Telecommunications Authority has supplied us with details of the Fund membership at the valuation date. We have carried out general checks on the quality of the data, and checked it against the data used at the previous valuation.

Please notify us if you have any reason to believe that the data we have used is incomplete or inaccurate.

Summary of membership data

The table below presents a summary of the scheme membership data as at 31/12/2018.

All amounts in EURO.

Data item	31/12/2018	31/12/2017
Number of active employees	1.580	1.591
- Average monthly pay	€ 3.366	€ 3.188
- Average Age (years)	49,0	48,1
- Average Pensionable Service	24,2	23,3
Number of pensioners	1.533	1.531
- Average monthly pension	€ 1.835	€ 1.837
- Average Age (years)	69,4	68,7
Number of deferred members	52	68
- Average monthly pension	€ 1.278	€ 1.327
- Average Age (years)	49,1	50,8
Number of widows / orphans	333	318
- Average annual pension	€ 1.169	€ 1.165
- Average Age (years)	77,2	76,5

4. Fund Assets and Financial Development

Market Values

The table below presents the market value of plan assets as provided to us by the company, as at 31 December 2018 and 31 December 2017.

All amounts in €:

Year ending	31/12/2018	31/12/2017
Market value of Assets	582.869.649	592.869.649

Cashflows during the year

CYTA has informed us of the following cash flows during the period 01/01/18 – 31/12/18.

All amounts in EURO.

Cash flow	01/01/18 – 31/12/18
Company contributions	26.059.045*
Pension and Lump Sum benefits	33.779.020
Employee contributions	3.078.326

* Includes deficit contributions of EUR19,6m payable during FY2018.

Return on Assets

Given the market value of the Fund Assets at 31/12/2017, and the above cash flows for the period 01/01/2018 – 31/12/2018, the average return achieved during the period was about **-0,9%**.

5. Valuation Method & Assumptions

Introduction

The benefit structure of the Plan, its membership and its assets at the valuation date are all known facts. However, the Plan's future finances also depend on uncertain factors such as future investment returns, pay and pension increases, rates of mortality and employee turnover.

Therefore, we need to make long-term assumptions, covering the period until all the present members have retired and all benefits arising from their membership have been paid.

Key financial assumptions

The valuation results are sensitive to the choice of financial assumptions. The table below shows the key financial assumptions agreed with the company for the current and previous actuarial valuations.

Assumption	31/12/2018	31/12/2017
Discount rate	2,90%	3,00%
Price inflation	1,75%	2,00%
Salary increases	2,00%	2,50%
Pension increases	Years 2019-2020: 1,00% Years 2021+: 1,25%	Years 2018-2020: 1,00% Years 2021+: 1,50%

Appendix 2 discusses assumption selection in more detail.

Key demographic assumptions

The table below shows the key demographic assumptions agreed with the company for the current and previous actuarial valuations.

Assumption	31/12/2018	31/12/2017
Mortality	80% of EVK2000	84% of EVK2000
Normal Retirement	Age 65	Age 65
Other pre-retirement exits	None	None

Appendix 2 discusses assumption selection in more detail.

Valuation Method

Different methods affect the pace of funding, but every method should end up with sufficient assets to meet the liabilities as they fall due (provided the assumptions prove to be right and recommended contributions are paid).

For schemes closed to new entrants, the Attained Age Method can be used as it calculates the cost of the benefits expected to accrue to members over their expected remaining membership of the scheme expressed as a percentage of their expected pensionable pay. It also allows for projected future increases in pay through to retirement or date of leaving service. The method is based on the current membership and takes no account of the possibility of new members joining the scheme. It is therefore used mainly for closed schemes where no new members are

admitted as in these circumstances the required contribution rate is reasonably stable.

The method used for this valuation is the Attained Age method.

6. Funding Valuation Results

Past service position

The funding objective is to hold assets equal to the funding target. Therefore, we compare the market value of assets with the value of past-service ongoing liabilities. The table below summarizes the past-service results.

Technical Provisions (EUR)	31/12/2018
Actives	(260.617.667)
Deferreds	(15.326.725)
Pensioners	(419.933.906)
Widows / Orphans	(28.326.722)
Total Funding Target / Technical Provisions	(724.205.019)
Market Value of Assets	582.869.649
Funding Surplus / (Deficit)	(141.335.370)
Funding Level	80,5%

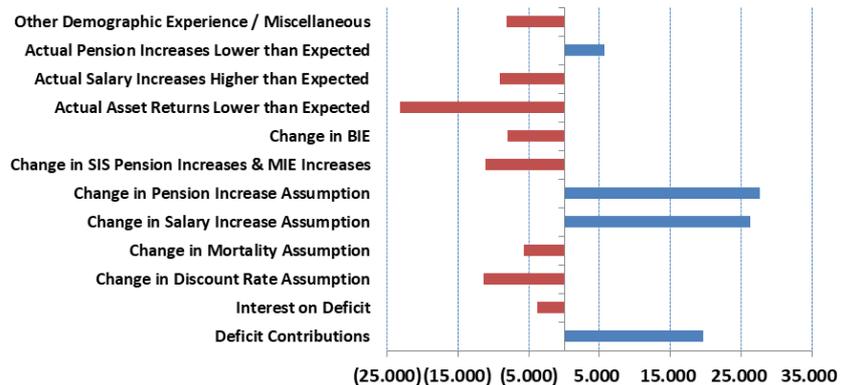
The following table shows the split of the past-service results into the Gross part (before deduction of the State earnings-related pension) and the SIS part (State earnings-related pension):

31/12/2018	Gross	SIS	Net
Actives	(489.999.271)	(229.381.605)	(260.617.667)
Deferreds	(22.058.015)	(6.731.291)	(15.326.725)
Pensioners	(605.575.582)	(185.641.676)	(419.933.906)
Widows / Orphans	(39.568.047)	(11.241.325)	(28.326.722)
Funding Target	(1.157.200.916)	(432.995.897)	(724.205.019)

Analysis of Surplus

As at the valuation dated 31 December 2017, the Fund had a past-service deficit of €140.312k. The past-service position has therefore worsened by €1.023k. The table below summarises the main elements that contribute to this:

Surplus/(Deficit), € 000s	31/12/17 – 31/12/18
Surplus / (Deficit) at 31/12/2017	(140.312)
Deficit Contributions	19.600
Interest on Deficit	(3.767)
Change in Discount Rate Assumption	(11.345)
Change in Mortality Assumption	(5.739)
Change in Salary Increase Assumption	26.356
Change in Pension Increase Assumption	27.713
Change in SIS Pension & MIE Increases	(11.082)
Change in BIE	(8.060)
Actual Asset Returns Lower than Expected	(23.132)
Actual Salary Increases Higher than Expected	(9.075)
Actual Pension Increases Lower than Expected	5.656
Other Demographic Experience / Miscellaneous	(8.148)
Surplus / (Deficit) at 31/12/2018	(141.335)



Future service position

Standard Contribution Rate (SCR)

The **Standard Contribution Rate (SCR)** is the cost of benefits expected to accrue to existing members after the valuation date, expressed as a % of expected payroll.

The table below presents the SCR, under the chosen valuation method:

Future Funding costs	Gross	SIS	Net
Standard Contribution Rate (SCR)	32,6%	(18,5%)	14,0%

- The rate in the above table is presented as a % of pensionable salary (i.e. basic pay plus COLA, excluding 13th salary).
- The SCR ignores any past-service surplus or deficit.
- The above rate does not include the 5% employees' contribution into the Scheme.
- On the current funding method and assumptions, the SCR should remain stable (as a % of salaries) if the age/sex/salary profile of active members remains stable.
- If experience is as assumed, the above contribution rate is expected to be sufficient to finance the future service benefits.

The main results are summarized in the following table.

Valuation Results	Central Scenario
<i>Discount Rate</i>	2,90%
Funding target	(724.205.019)
Market Value of Assets	582.869.649
Surplus / (Deficit)	(141.335.370)
Funding Level	80,5%
SCR*	14,0%
Employees' Contribution Rate	-5,0%
Employer's Contribution Rate	9,0%
Estimated Employer's Contribution (FY2019)	€5,8M

* The disclosed contribution rate ignores any past-service surplus or deficit.

Sensitivity Results

We have performed sensitivity analysis on the Fund results, and the results are as follows:

Technical Provisions	AAA yield + 2,3% (Base)	AAA yield + 2,8%
Actives	(260.617.667)	(235.435.187)
Deferreds	(15.326.725)	(14.165.977)
Pensioners	(419.933.906)	(397.192.677)
Widows / Orphans	(28.326.722)	(27.452.137)
Total Funding Target / Technical Provisions	(724.205.019)	(674.245.978)
Market Value of Assets	582.869.649	582.869.649
Funding Surplus / (Deficit)	(141.335.370)	(91.376.329)
Funding Level	80,5%	86,4%

7.Recovery Plan

Definition	Where a valuation shows a funding shortfall against the technical provisions , trustees must prepare a recovery plan setting out how they plan to meet the funding objective .
Introduction	<p>A recovery plan must be prepared by the trustees to satisfy the requirements of Article 34 of Law 208(l) 2012, after obtaining the advice of the Scheme Actuary and after consultation with the Employer.</p> <p>The recovery plan follows the actuarial valuation of the scheme as at 31 December 2018 which has revealed a funding shortfall (technical provisions minus value of assets) of €141.335.370.</p>
Steps to be taken to ensure that the funding objective is met	To eliminate the funding shortfall, the trustees and the Employer need to agree the level and type of additional contributions (i.e. contributions over and above those needed to cover benefits being earned in the future) that will be paid into the Scheme.
Period in which the funding objective should be met	<p>The trustees together with the Employer also need to agree the period over which the funding objective should be met.</p> <p>Under the agreed recovery plan, if the assumptions made are borne out in practice and future scheme experience is as expected, then the funding shortfall must be eliminated within the chosen period.</p> <p>Trustees should recognize that a longer recovery plan period may be appropriate where technical provisions reflect a particularly low risk approach. Conversely, the impact on scheme risk of adopting weaker technical provisions may result in the need for a proportionately shorter recovery plan period.</p> <p>Recovery periods can be extended especially if additional security provided (see Alternative Financing section below).</p>
Recovery plan options	<p>As already mentioned, on the basis of our long-term assumptions there was, at the valuation date, a funding deficit of €141.335.370.</p> <p>In some situations, it may be appropriate to assume a higher investment return for the recovery plan than the discount rate used to calculate technical provisions. The extent to which this is appropriate will depend on the level of risk associated with the assumptions used in the technical provisions calculation and investment strategy applying.</p> <p>According to global practice, it is very common for pension schemes (similar to that of CYTA) to consider the best estimate asset returns for the purposes of drafting the recovery plan. As described in detail in Appendix 2, at 31 December 2018, it has been calculated that, over the next 10 years, the Scheme's assets have an expected return of 4,70% pa. We have thus calculated the level of contributions required to finance the past service deficit, assuming a return on assets of 4,70% pa.</p> <p>In determining the optimal recovery plan, it is very important for the</p>

Employer and the trustees to consider the issue of affordability upfront, taking into account any reinvestment needs for sustainable business growth.

The duration of the Scheme's liabilities is 15 years.

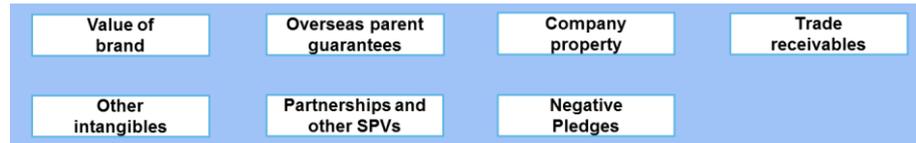
The trustees together with the Employer need to decide how to finance the past-service deficit.

The trustees have decided to finance the past service deficit as follows:

- An immediate lump sum deficit contribution of **€25,0 million**.
- An annual deficit contribution of **€19,6 million** over a period of **6,25 years**.

Use of Alternative Financing

Non-cash funding and security can be used to optimize cash payments allowing the Employer and the trustees to consider the issue of affordability upfront. First step is to identify suitable assets – ideally those that are under-utilised or under-valued on the balance sheet. Consideration then needs to be given to the vehicle which the assets are placed. When to introduce alternative financing into funding discussions needs careful consideration – either before Technical Provisions are finalised, or once the deficit is agreed to support the Recovery Plan. The latter normally allows greater flexibility. Where significant cash is being paid, consideration should be given to the use of a contingent vehicle to avoid a trapped surplus in future. Finally, careful consideration of the potential benefits (e.g. taxation and accounting treatment) is needed to decide whether the more complex structures add significant value. The chart below shows some possible alternative financing methods.



8. Investment Policy

Suitability of the current asset allocation

We suggest examining the appropriateness of the current asset allocation in relation to the nature and duration of the obligations:

- Interest rate and inflation risk are often the largest investment risks being run by pension schemes.
- The Fund is exposed to significant **interest rate risk** due to the mismatch of the duration of assets and liabilities.
- In addition, the Fund faces **inflation risk**, since all the liabilities are either directly (through increases in pensions) or indirectly (through wage increases), exposed to inflation risks. Investments to ensure inflation-linked returns (i.e. real returns through investments such as equities, index-linked bonds and assets whose return increase with increasing inflation) could be used for better match with the expected increases in liabilities.
- Cash is usually held in deposits at very short term interest rates. Usually, pension funds hold cash either as a short term investment or as a “working balance” to enable smoothness in other transactions. Problems will arise if income (interest income and contributions) is not sufficient to meet benefit outgo. As this is not a problem currently faced by the Fund, it appears that such a high allocation of assets in cash-type investments is not necessary.
- The economic climate has kept rates depressed with upside risks being tempered by the very real risk that rates stay lower for longer.
- The Trustees should ensure that their approved long-term Investment Strategic Allocation is implemented in the near future to ensure alignment of the funding and investment objectives. Further, the level of mismatching between Assets and Liabilities should be closely monitored against the risk that rates stay lower for longer.

9. Recommendations & Conclusions

Introduction

The main conclusions are summarized below.

Summary of Results

The main results of the funding valuation are as follows:

- On the basis of the long-term assumptions there was, at the valuation date, a funding deficit of **€141.335.370**.
- This corresponded to a past service funding ratio of **80,5%**.
- A future-service funding cost of **14,0%** of payroll.

Recommended Contribution rates

Future Service funding cost recommendations:

- On the new valuation results as at 31 December 2018, the rate that is expected to be sufficient to cover the cost of future service accrual is **14,0%** of pensionable salary.
- Allowing for employee contributions of 5%, the Standard Contribution Rate paid by CYTA should be revised to **9,0%** of Payroll.
- The above rates ignore the past-service deficit.

Recovery Plan for Deficit repair contributions:

- To eliminate the funding shortfall, the trustees and the Employer need to agree the **level** and **type** of additional contributions (i.e. contributions over and above those needed to cover benefits being earned in the future) that will be paid into the Scheme.
- The trustees together with the Employer also need to agree the **period** over which the funding objective should be met.
- The trustees have decided to finance the past service deficit as follows:
 - An immediate lump sum deficit contribution of **€25,0 million**.
 - An annual deficit contribution of **€19,6 million** over a period of **6,25 years**.
- The Recovery Plan should be submitted to the Regulator for approval.

Investment Policy Recommendations

- The Trustees should ensure that their approved long-term Investment Strategic Allocation is implemented in the near future to ensure alignment of the funding and investment objectives.
- Further, the level of mismatching between Assets and Liabilities should be closely monitored against the risk that rates stay lower for longer.

Signed on behalf of
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Appendices



Appendix 1: Summary of plan provisions

Ηλικία Υποχρεωτικής Αφυπηρέτησης (ΗΥΑ)	<ul style="list-style-type: none"> • Συμπλήρωση 63^{ου} έτους ηλικίας μεταξύ 01/01/13 - 31/12/13 => ΗΥΑ = 63,5 • Συμπλήρωση 63^{ου} έτους ηλικίας μεταξύ 01/01/14 - 31/12/14 => ΗΥΑ = 64,0 • Συμπλήρωση 63^{ου} έτους ηλικίας μεταξύ 01/01/15 - 31/12/15 => ΗΥΑ = 64,5 • Συμπλήρωση 63^{ου} έτους ηλικίας μετά 01/01/16 => ΗΥΑ = 65,0 <p>Η ΗΥΑ αναπροσαρμόζεται από το 2018 και μετά, κάθε 5 χρόνια, με βάση τη μεταβολή του προσδόκιμου ζωής κατά την ΗΥΑ. Το 2018 θα γίνει η πρώτη αναπροσαρμογή που θα αντιστοιχεί στη μεταβολή του προσδόκιμου ζωής κατά την 5ετία 2018 έως 2023.</p>
Τελικές Συντάξιμες Αποδοχές (ΤΣΑ)	<p>Δώδεκα φορές ο μηνιαίος βασικός μισθός συν οι αυξήσεις βιοτικού επιπέδου (COLA) κατά την ημερομηνία αποχώρησης.</p>
Συντάξιμη Υπηρεσία (N)	<p>Η ακριβής συμπληρωμένη υπηρεσία, μέχρι τη συσσώρευση της μέγιστης σύνταξης του 50% των ΤΣΑ.</p>
Κανονική Σύνταξη Αφυπηρέτησης	<p>Προϋποθέσεις:</p> <ul style="list-style-type: none"> • συμπληρωμένη υπηρεσία ίση με 5 χρόνια και πάνω, και • ηλικία 55 χρόνια και πάνω. <p>Ύψος Σύνταξης (άθροισμα Α και Β):</p> <p><u>(Α) Υπηρεσία πριν 01/01/13</u></p> <ul style="list-style-type: none"> • $1/800 \times \text{ΤΣΑ} \times \text{Συμπληρωμένοι Μήνες Υπηρεσίας μέχρι 01/01/13}$ <p><u>(Β) Υπηρεσία μετά 01/01/13</u></p> <ul style="list-style-type: none"> • $1/800 \times \text{Μέσος Όρος Ακαθάριστων Συντάξιμων Απολαβών για Συνολική Υπηρεσία, Αναπροσαρμοσμένων με την Αξία της Εκάστοτε Ισχύουσας Ασφαλιστικής Μονάδας του ΤΚΑ} \times \text{Συμπληρωμένοι Μήνες Υπηρεσίας από 01/01/13}$ <p>Μέγιστη σύνταξη = 50% x ΤΣΑ</p>
Κανονικό Εφάπαξ Αφυπηρέτησης	<p>Ύψος Εφάπαξ (άθροισμα Α και Β):</p> <p><u>(Α) Υπηρεσία πριν 01/01/13</u></p> <ul style="list-style-type: none"> • $14/3 \times \text{ετήσια σύνταξη (400 μήνες υπηρεσία μέχρι 01/01/13)}$ • $14,5/3 \times \text{ετήσια σύνταξη (ηλικία 61, 412 μήνες υπηρεσία μέχρι 01/01/13)}$ • $15/3 \times \text{ετήσια σύνταξη (ηλικία 62, 424 μήνες υπηρεσία μέχρι 01/01/13)}$ • $15,5/3 \times \text{ετήσια σύνταξη (ηλικία 63, 436 μήνες υπηρεσία μέχρι 01/01/13)}$ <p><u>(Β) Υπηρεσία μετά 01/01/13</u></p> <ul style="list-style-type: none"> • $14/3 \times \text{ετήσια σύνταξη}$

Μετατροπή Εφάπαξ σε Σταθερό Μηνιαίο Ποσό	Δυνατότητα μετατροπής εφάπαξ σε σύνταξη (0%, 25%, 50%, 75% ή 100%), με βάση Αναλογιστικών Συντελεστών , ανάλογα με την ηλικία του υπαλλήλου κατά την αφυπηρέτηση.
Αναλογική Σύνταξη από το Ταμείο Κοινωνικών Ασφαλίσεων (ΤΚΑ)	Η σύνταξη που σχετίζεται με συντάξιμη υπηρεσία μετά την 6η Οκτωβρίου 1980, μειώνεται με τη συμπληρωματική σύνταξη του ΤΚΑ που σχετίζεται με εισφορές που πληρώθηκαν κατά την εργοδότηση μετά την 6η Οκτωβρίου 1980. Η σύνταξη αρχίζει να συμψηφίζεται όταν το μέλος αρχίζει να λαμβάνει την αναλογική σύνταξη από το ΤΚΑ.
Αναλογιστική Μείωση Συντάξεων	Όταν υπάλληλος αφυπηρετεί ή παραιτείται πριν από τη συμπλήρωση της ΗΥΑ, η σύνταξη και το εφάπαξ ποσό που κερδήθηκε για υπηρεσία μετά την 01/01/13 μειώνονται βάσει ποσοστών ανάλογα με την ΗΥΑ (δεν ισχύει για θάνατο και περιπτώσεις μόνιμης ανικανότητας). Δεν ισχύει για ωφελήματα που κερδήθηκαν για υπηρεσία πριν την 01/01/13.
Θάνατος μετά την Αφυπηρέτηση	Πληρώνεται σύνταξη χρείας ίση με 75% ή 37,5% της σύνταξης του μέλους ανάλογα με την περίοδο κατά την οποία έγιναν εισφορές στο Ταμείο από το μέλος. Η αναλογιστική μείωση της Κανονικής Σύνταξης Αφυπηρέτησης συνεπάγεται σε μείωση της Σύνταξης Χρείας.
Θάνατος κατά την Εργοδότηση	Πληρώνεται σύνταξη χρείας ίση με 75% ή 37,5% της σύνταξης του μέλους βάσει ενισχυμένης υπηρεσίας (η μέγιστη ενισχυμένη υπηρεσία είναι ίση με την προσδοκώμενη υπηρεσία μέχρι την ΗΥΑ). Επίσης πληρώνεται εφάπαξ ποσό ίσο με το μεγαλύτερο: <ul style="list-style-type: none"> • των ετήσιων συντάξιμων αποδοχών, και • του εφάπαξ ποσού που θα πληρωνόταν αν το μέλος αφυπηρετούσε κανονικά. Η αναλογιστική μείωση της Κανονικής Σύνταξης Αφυπηρέτησης και του Εφάπαξ Ποσού Αφυπηρέτησης συνεπάγεται σε μείωση της Σύνταξης Χρείας.
Αυξήσεις Συντάξεων	Οι συντάξεις αυξάνονται ετησίως με βάση τις αυξήσεις του ενεργού προσωπικού (γενικές και COLA).
Εισφορές Μελών	<u>Μόνιμη</u> αποκοπή 3% των μηνιαίων συντάξιμων απολαβών , οι οποίες καταβάλλονται στο Πάγιο Ταμείο της Δημοκρατίας για τους κρατικούς υπαλλήλους, ενώ για τους υπαλλήλους του ευρύτερου δημόσιου τομέα καταβάλλονται στις αντίστοιχους οργανισμούς. <u>Περιοδική</u> εισφορά 2% των μηνιαίων συντάξιμων απολαβών για μεταβίβαση της σύνταξης υπαλλήλου σε περίπτωση θανάτου του στη χήρα/χήρο και εξαρτώμενα τέκνα. Οι μηνιαίες εισφορές στο Ταμείο Χήρων και Τέκνων τερματίζονται με τη συμπλήρωση 400 μηνιαίων εισφορών στο εν λόγω Ταμείο.
Νεοεισερχόμενοι	Νεοεισερχόμενοι υπάλληλοι κατά ή μετά την 01/10/2011 δεν καλύπτονται από το Σχέδιο.
Φορολόγηση	Σύνταξη - υπόκειται σε Φόρο Εισοδήματος.

	<p>Εφάπαξ που έχει κερδηθεί με υπηρεσία πριν 01/01/13 – αφορολόγητο. Εφάπαξ που έχει κερδηθεί με υπηρεσία από 01/01/13 – υπόκειται σε Φόρο Εισοδήματος.</p>
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Appendix 2: Valuation assumptions

Introduction

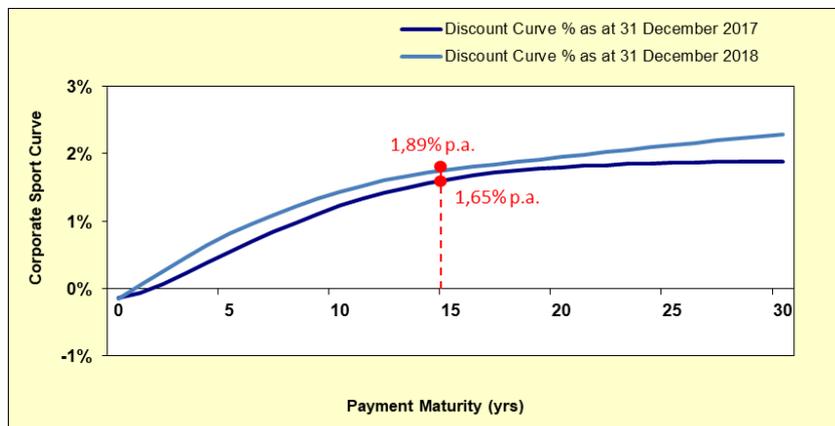
The assumptions used for assessing the long-term ongoing funding target are summarized below. Greater importance should be attached to the valuation assumptions as a whole rather than to the individual elements. More importantly, the differences between the financial assumptions have a greater effect on valuation results than the absolute levels of each item.

The financial assumptions have the most significant effect on valuation results and are thus described first.

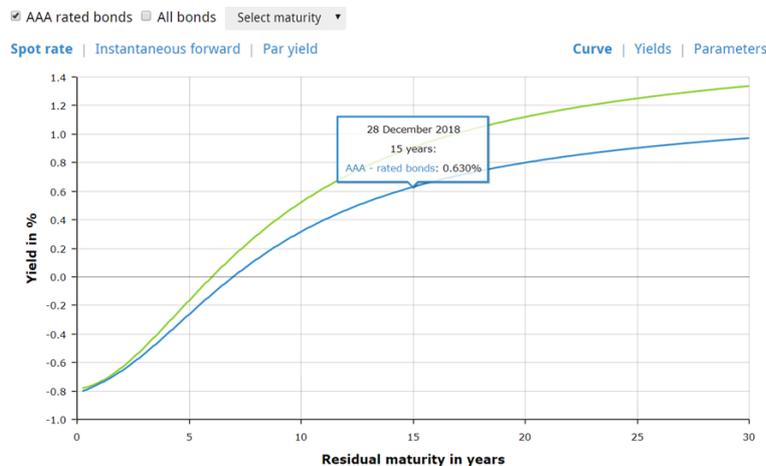
Discount rate

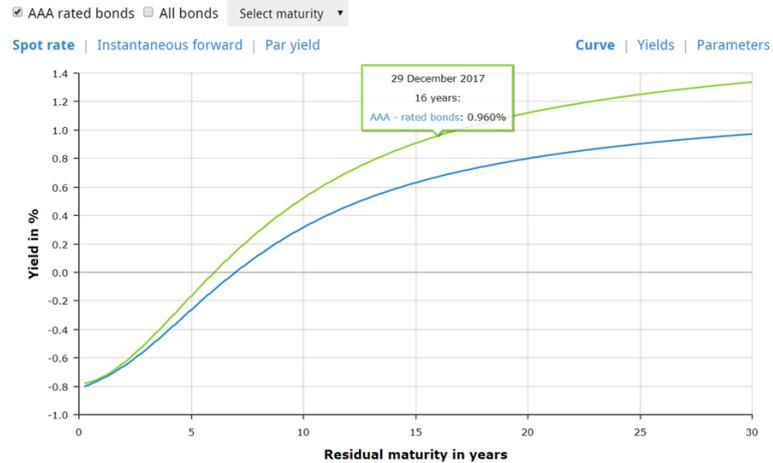
The discount rate is the valuation assumption with the widest range of choices. It is used to translate the estimated future benefit payments from the Scheme into a single figure which represents the amount that the Scheme needs to hold today to provide them.

The chart below shows the full Aon Eurozone Yield Curve which has been adopted for the purposes of the IFRS (IAS19) accounting valuation.



The chart below shows the Euro area yield curve as published by ECB, which is based on AAA-rated euro area central government bonds.





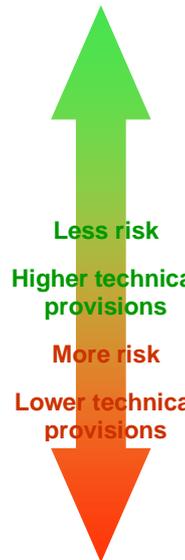
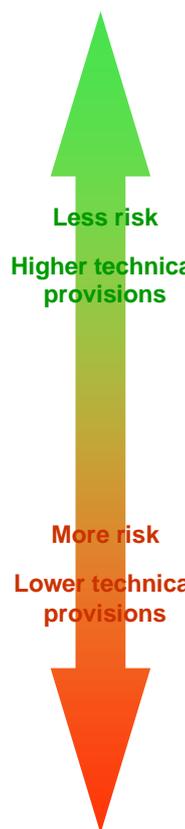
All charts show the point on the yield curves with approximately the same duration as the Scheme's liabilities (i.e. 15 years as at 31/12/2018). The rates are also summarized in the following table:

Yield Curve	31/12/2018	31/12/2017
Aon Eurozone Yield Curve (AA-rated euro area corporate bonds)	1,89% p.a.	1,65% p.a.
Euro Area Yield Curve (AAA-rated euro area central govt bonds)	0,6% p.a.	1,0% p.a.

As per the requirements of Law 208(I) 2012, the maximum rates of interest used shall be chosen prudently and determined in accordance with any relevant rules of the home Member State. These prudent rates of interest shall be determined by taking into account:

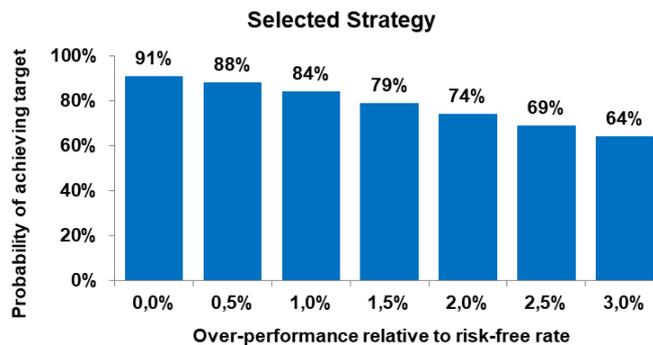
- the yield on the corresponding assets held by the institution and the future investment returns, and/or
- the market yields of high-quality or government bonds.

Thus, the full spectrum of choices for setting the discount rate assumption is presented in the following charts:

	Government bond yields	<ul style="list-style-type: none"> • Could construct portfolio of Government bonds • Eliminate all investment risk (i.e. risk-free rate)
	Corporate bond yields	<ul style="list-style-type: none"> • Could construct portfolio of Corporate bonds • Eliminate most investment risk, but not risk of default • Used for accounting purposes
	Bond yields plus allowance for scheme assets to outperform bonds	<ul style="list-style-type: none"> • Allows for scheme assets to outperform bonds by investing in other assets • Allowable (depending on scheme's investment policy) but Trustees need to satisfy themselves of funding risks
	Government bond yields	<ul style="list-style-type: none"> • Adopt the AAA-rated euro area central government bonds yield curve issued by the European Central Bank (ECB). • Implied single Discount Rate according to the duration of CYTA scheme's liabilities: <ul style="list-style-type: none"> ➢ 0,6% p.a.
	Corporate bond yields	<ul style="list-style-type: none"> • Adopt the market yields of a scheme-specific high-quality corporate bond liability proxy. • Implied single Discount Rate derived from a basket of AA Eurozone Corporate bonds fit on the CYTA scheme liability cash flow profile (as per the IAS19 Yield Curve approach): <ul style="list-style-type: none"> ➢ 1,89% p.a.
	Bond yields plus allowance for scheme assets to outperform bonds	<ul style="list-style-type: none"> • Adopt the yield on the corresponding assets held by the scheme and the future investment returns. • Implied single Discount Rate as a result of the implementation of the proposed long-term investment strategy: <ul style="list-style-type: none"> ➢ 4,70% p.a.

The current investment strategy is broadly 69% growth assets (20% global equities, 11% infrastructure, 5% European property, 18% local property, 15% hedge funds) and 31% income assets (6% absolute return bond funds, 10% global corporate bonds, 10% local cash, 5% cash). The implementation of the investment strategy is in progress and is expected to be fully completed by the end of the year.

At 31 December 2018, it has been calculated that, over the next 10 years, the Scheme's assets have an expected return of 4,1% p.a. in excess of AAA-rated Eurozone government bond yields (i.e. 4,7% minus 0,6%) and the probability that they outperform these yields over this period is around 91%, as displayed on the following chart.



In assessing the level of prudence in the discount rate, it is useful for the Trustees to consider the question "What is the probability of the Scheme's assets returning X% p.a. above the rate of increase in the Scheme's liabilities (assuming they increase in line with government bond yields)?"

Based on the Scheme's strategic asset allocation, Aon's "Capital Market Assumptions" at 31 December 2018 and Aon's projection methodology, we have assessed that the likelihood of the Scheme's assets returning at least 1,5%/2,0%/2,5%/3,0% p.a. above the increase in the Scheme's liabilities is of the order of 79%/74%/69%/64% over the next 10 years (as shown in the diagram above).

As at 31 December 2018, government bond yields were kept at relatively low levels. Most commentators (including ourselves) believe that in the medium term government bond yields will revert to higher, more "normal" levels. Because of this, the market already prices in an expected increase in such levels over the medium term which partly feeds through into the valuation assumptions through using the yields at the duration of the liabilities rather than at shorter terms.

However, our view is that yields will rise by more than the markets are pricing into medium-term government bond yields currently. So an argument could be put forward to increase the "government bond yields + [x]% discount rate" for this actuarial valuation.

Based on all of the above, and in line with prior year's methodology, the Trustees of the Scheme have decided to set the discount rate by reference to the single "spot" yield on the AAA-rated euro area central government bonds yield curve at the duration of the liabilities (i.e. 15 years), plus a margin of 230bps to allow for future expected returns of the current investment strategy, leading to a discount rate assumption of **2,90% pa** (i.e. 0,6% + 2,3%).

Price inflation

Under IFRS the assumed inflation rate should reflect the best estimate of long-term inflation. This estimate may be derived from historical inflation rates and/or looking at the long-term rates implied by the bond market where index-linked bonds are regularly traded. As a base point for the financial assumptions, we need to establish an assumption for future increases in Cypriot price inflation (CPI). Typically the assumption for price inflation is set by reference to the rate of implied inflation («breakeven inflation») derived from the difference between nominal government bonds and index linked bonds of the same term.

The Trustees, following assumptions guidance and deliberations, have decided to adopt an assumption of **1,75% pa**.

Salary Increases

Salary increases comprise of three elements, namely *general increases*, *increases in the COLA index* (this index increases in line with price inflation), and *promotional/merit increases*.

According to the recent legislative changes, specifically *Law 192(I)/2011* and *Law 185(I)/2012*, salary increases are structured as follows:

- According to the Memorandum of Understanding, the indexation system will be reformed as follows:
 - a lower frequency of adjustment, with the base period for calculating the indexation (COLA) being lengthened from the current period of six months to twelve months. Indexation would take place on 1st January each year;
 - a mechanism for automatic suspension of application and derogation procedures during adverse economic conditions, such that if in the second and third quarters of a given year negative rates of growth of seasonally adjusted real GDP are registered, no indexation would be effected for the following year; and
 - a move from full to partial indexation, with the rate of wage indexation being set at 50% of the rate of increase of the underlying price index over the previous year.

As such, given the current outlook and the recent legislative changes, as well as the Company's expectations regarding future earnings increases, the Trustees decided to adopt a salary increase assumption of **2,00% pa** allowing for COLA, general pay increases and promotional/merit increases.

Pension Increases

The rules of the Pension Scheme allow for pensions in payment to increase in line with the increases granted to public sector employees. This has to date been in line with general salary increases and COLA increases.

Given the recent changes in legislation, as well as the Company's expectations regarding future pension increases, the Trustees decided to adopt a pension increase assumption of:

- **1,00% pa** for the years 2019 – 2020, and
- **1,25% pa** for the years 2021 onwards.

SIS Supplementary Pension Increases

The SIS supplementary pension increases in line with increases in the COLA. In line with the revised assumptions above, the Trustees decided to adopt a rate of **0,875% pa** for the years 2018 onwards, for this assumption.

Increase of the Maximum Insurable Earnings Limit

Social insurance contributions that are added for the above deduction are calculated on salaries up to the maximum insurable earnings limit.

In line with the revised assumptions above, the Trustees decided to adopt a rate of **2,75% pa** for this assumption (i.e. 1,0% per annum above the price inflation assumption).

Mortality

In line with the Trustees' decision, we have used a general mortality table called **EVK2000 at 80% level** which is based on Swiss mortality. This table is used to represent expected mortality before retirement. We believe this table is a reasonable representation of expected mortality for Cypriot employees. The expected life for a male and female aged 65 under this table is 84,25 and 87,02 respectively.

Normal Retirements

We have assumed that all employees will retire on their Normal Retirement Date as dictated by the recent changes in Law 216(l) 2012, i.e. at **age 65** for both males and females.

Other Exits from Service

We have adopted a **nil** assumption for other pre-retirement exits (like disability, voluntary withdrawals, redundancy).

The table below summarises the assumptions adopted as at 31/12/2018 and 31/12/2017:

Assumptions	31/12/2018	31/12/2017
Discount Rate	2,90%	3,00%
Inflation Rate	1,75%	2,00%
Salary Increases	2,00%	2,50%
Pension Increases	2019-2020: 1,00% 2021+: 1,25%	2018-2020: 1,00% 2021+: 1,50%
SIS Supplementary Pension Increases	0,875%	1,00%
Increase on MIE Limit	2,75%	3,00%
Mortality	80% of EVK2000	84% of EVK2000
Normal Retirement	Age 65	Age 65
Other pre-retirement exits	None	None

Appendix 3: Glossary

Discount rate	This is used to place a present value on a future payment. A 'risk-free' discount rate is usually derived from the investment return achievable by investing in government gilt-edged stock. A discount rate higher than 'risk-free' rate is often used to allow for some of the extra investment return that is expected by investing in assets other than gilts.
Funding surplus/deficit	This is the value of assets less the funding target. If the funding target is greater than the value of assets, then the shortfall is called the funding deficit .
Funding ratio	This is the ratio of the value of assets to the funding target .
Funding target	An assessment of the present value of the benefits that will be paid from the scheme in the future, normally based on pensionable service prior to the valuation date.
Present value	Actuarial valuations involve projections of pay, pensions and other benefits into the future. To express the value of the projected benefits in terms of a cash amount at the valuation date, the projected amounts are discounted back to the valuation date by a discount rate . This value is known as the present value .
Attained age method	For schemes closed to new entrants, the attained age method is often used as it calculates the cost of the benefits expected to accrue to members over their expected remaining membership of the scheme expressed as a percentage of their expected pensionable pay. It also allows for projected future increases in pay through to retirement or date of leaving service. The method is based on the current membership and takes no account of the possibility of new members joining the scheme. It is therefore used mainly for closed schemes where no new members are admitted as in these circumstances the required contribution rate is reasonably stable.
Prudent	Prudent assumptions are assumptions that, if the Scheme continues on an ongoing basis, are more likely to overstate than understate the amount of money actually required to meet the cost of the benefits.
Recovery plan	Where a valuation shows a funding shortfall against the technical provisions , trustees must prepare a recovery plan setting out how they plan to meet the statutory funding objective .

About Aon

Aon empowers organizations and individuals to secure a better future through innovative human capital solutions. We advise and design a wide range of solutions that enable our clients' success. Our teams of experts help clients navigate the risks and opportunities to optimize financial security; redefine health solutions for greater choice, affordability, and wellbeing; and achieve sustainable growth by driving business performance through people performance. We serve more than 20,000 clients through our 15,000 professionals located in 50 countries around the world.

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