Northern Territory Government and Public Authorities' Superannuation Scheme

Actuarial investigation and Report as at 30 June 2016

September 2016

Scope and background

The report meets the requirements of the Northern Territory of Australia Superannuation Act

Area covered	Comments
Purpose and scope of report	• Prepared at request of the Commissioner of Superannuation • Report is at 30 June 2016 • Previous report at 30 June 2013, also prepared by Catherine Nance (FIAA) dated September 2013 • Report covers the unfunded employer financed benefits only, with the next report due no later than 30 June 2019
Background and governing legislation	• Report covers NTGPASS (a contributory lump sum scheme closed to new members from 9 August 1999) • NTGPASS established by the Superannuation Act as amended • Since the previous report the benefits remain unchanged
Taxation and compliance	• NTGPASS is an exempt public sector superannuation scheme • Under SIS legislation treated as complying for concessional taxation and superannuation guarantee purposes • NTGPASS complies with national superannuation standards under the Heads of Government Agreement
Statement of Compliance	• Our advice to you constitutes Prescribed Actuarial Advice as defined in the Code of Professional Conduct (the code) issued by the Institute of Actuaries of Australia and our advice complies with the Code in this respect • The report has been prepared in accordance with Professional Standard 400, issued by the Institute of Actuaries of Australia

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Summary of results as at 30 June 2016

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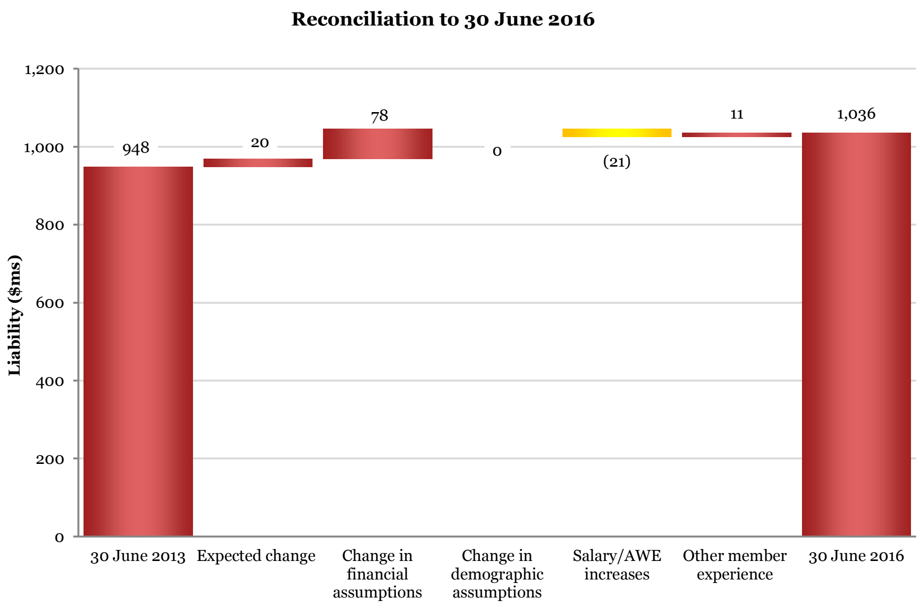
NTGPASS Accrued Liability

The schemes liability has increased by $88 million (9%) since 30 June 2013.
This is mainly due to the change in discount rate from 3.8% to 2.0% per annum.

Movement in liability $m



Main reasons

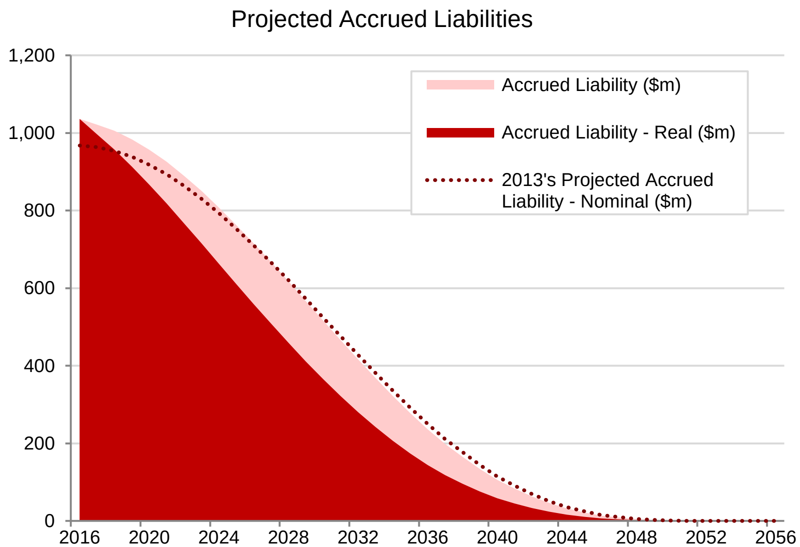
- The liability increased from $948 million in 2013 to $1,036 million in 2016 ($88 million increase) mainly due to:
    - Expected increase due to further accrual ($20 million)
    - Change in discount rate (3.8% pa in 2013 to 2.0% pa in 2016) ($142 million)

  Partially offset by;
    - Change in salary increase assumption from 4.5% pa in 2013 to 3.0% in 2016/17 and 4.0% pa thereafter ($64 million)
    - lower than expected salary/FAS increases over 3 years ($21 million)
- The Vested Benefits as at 30 June 2016 are $887 million.

NTGPASS Projected Accrued Liabilities and Cash flows

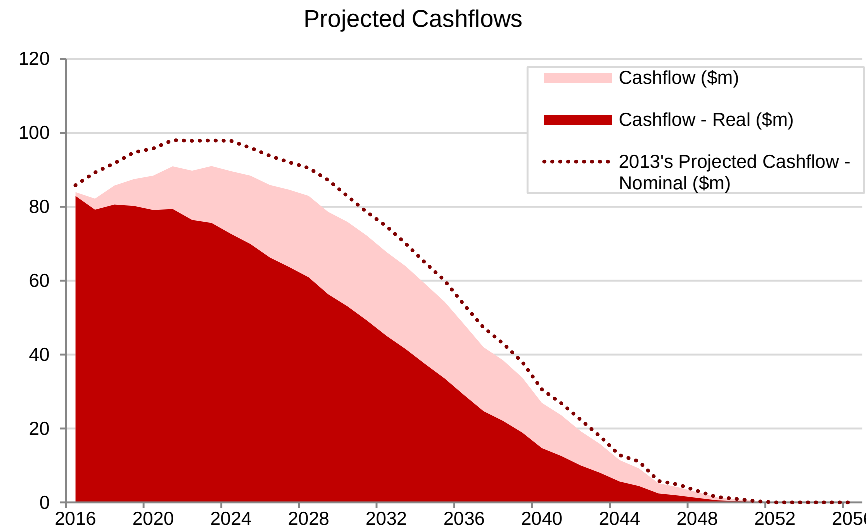
As at 30 June 2016, the value of Northern Territory's liability for NTGPASS was $1,036 million.

Projected Accrued Liabilities



- The accrued liabilities are expected to peak at $1,036.4 million in 2016
- The last members are expected to leave by 2052, at which stage the liability will be zero
- Current assumptions used for projections are:
  - Discount rate : 2.0% pa
  - Salary increase rate: 3.0% for FY 2017 and 4.0% pa thereafter
- The projected liabilities are higher than in 2013 mainly due to the change in discount rate.

Projected Cash flows



- The cash flows are expected to increase over the next 8 years to peak at $91 million in 2024
- It is expected that cash flows will be zero by 2053
- The cash flows are projected to be lower than in 2013, mainly due to the change in salary increase assumptions.

Membership data and review of experience

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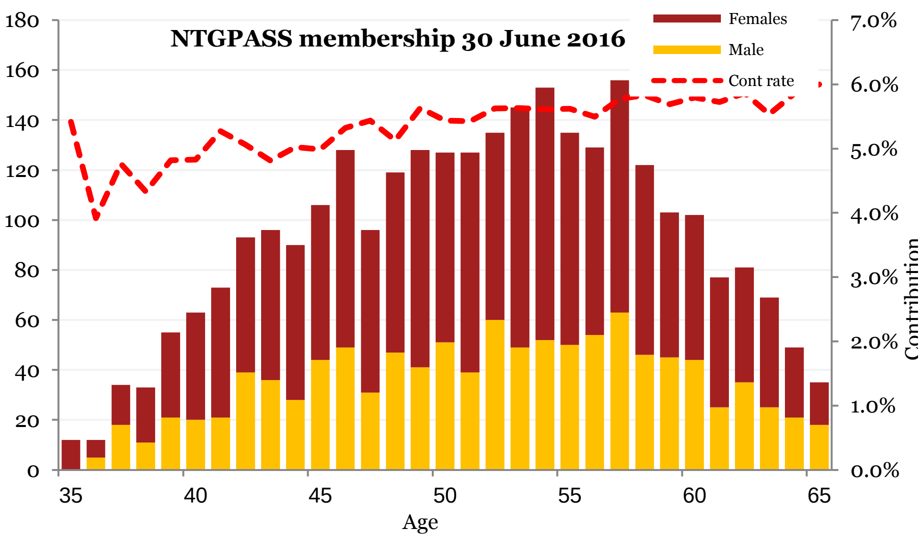
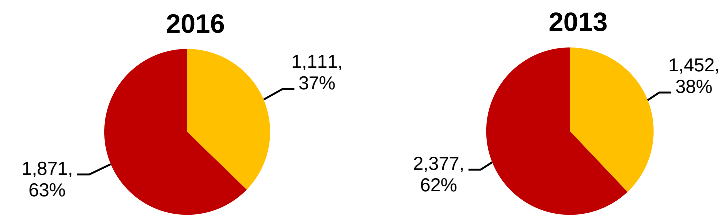
NTGPASS – Membership Summary

The scheme is shrinking each year, with membership falling by 7% per annum on average since 2006. Females make up the majority of membership



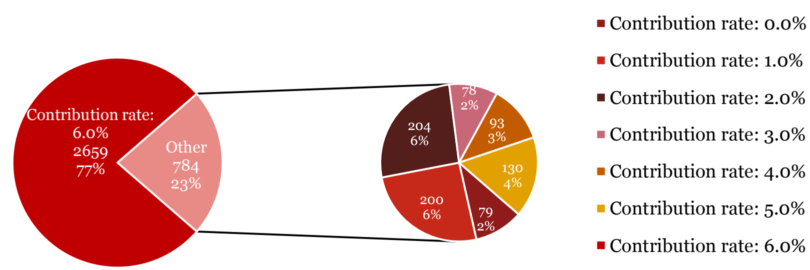
	30 June 2013	30 June 2016	Change
Number	3,829	2,982	847 6.9% (pa) decrease
Average Age	51.5	53.3	1.8
Average Benefit Salary	$95,006	$103,508	$8,502 2.9% (pa) increase
Average Benefit points	99.3	113.5	14.2

- As scheme closed in 1999, youngest members are in mid 30s
- The percentage of females has remained stable but slightly increased with 62% in 2013 to 63% in 2016



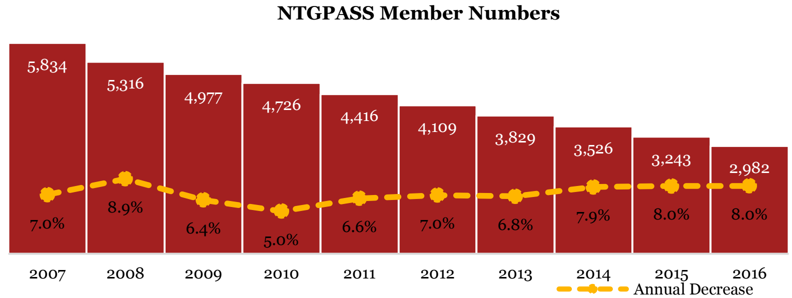
- The average age is rising, as might be expected
- The average benefit salary has risen year on year but impacted by AWE indexation (see over)
- The contribution rate (see graph above) rises with age, steadily rising to 6% per annum at age 65. Current average is 5.4% per annum

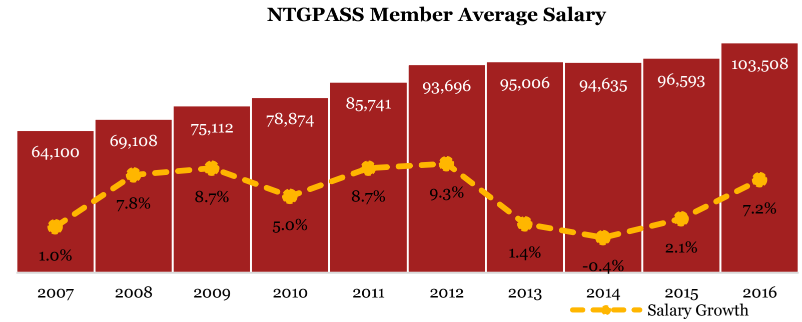
Distribution of contribution rate as at 30 June 2016



NTGPASS – Membership movement

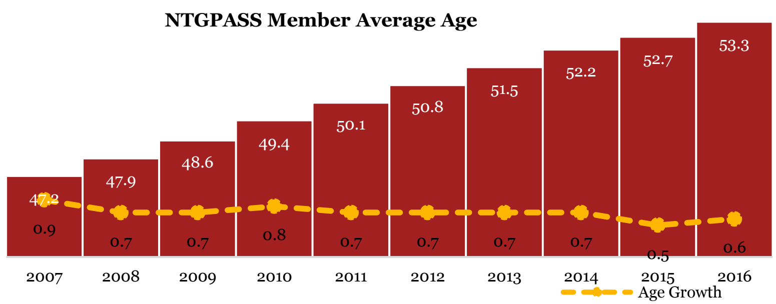
Decreasing membership while, increasing average age, salary and benefit points over the years

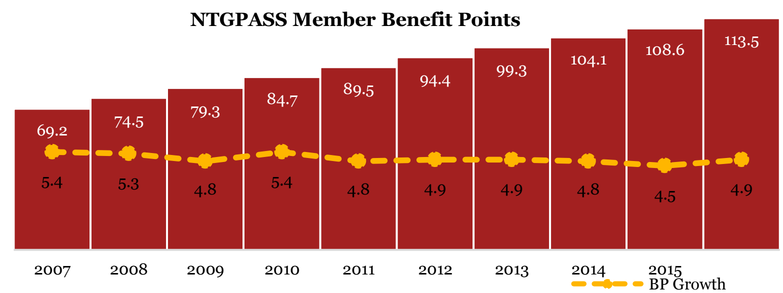




- As expected of a closed scheme, the number of members have been decreasing as defined benefit members leave employment
- Since 2011, the rate of members leaving the scheme has been stable at around 7.0% per annum
- There are 2,982 members remaining as at 30 June 2016

- We see a small increase in average salary over the last 3 years
- The decrease in 2014 average salary is due to the fall in AWE from 5.7% at 30 June 2013 to 2.5% at 30 June 2014 (see over)
- The average salary of the Scheme as at 30 June 2016 is just over $103,500





- As the Scheme is closed since 1999, we expect that the average age will increase over time
- Over the years, there has been steady increase, with average age of 53.3 as at 30 June 2016

- Member benefit points have been increasing at a stable but decreasing rate over the years which is in line with the contribution rate
- The Scheme's average benefit points as at 30 June 2015 is 113.5 which is equivalent to approximately 2.84 x benefit salary or $290,000

NTGPASS – Discount rate

From 30 June 2016 determined under AASB1056. Recommend use a discount rate based on government bonds which is consistent with how government values their liabilities.

AASB 119 – employee benefits

- Used by government to value it's defined benefit liabilities
- Rate used to discount benefits (unfunded) is determined by reference to market yield on government bonds with a term consistent with the liabilities as they fall due
- The same approach and rate has been used under AAS25 which applies to superannuation funds to 30 June 2016
- As at 30 June 2015 the discount rate was 3.0% based on a 10 year bond yield and would currently be 2%
- From 30 June 2016 funds must adopt AASB 1056

AASB 1056 – superannuation entities

- Set by fund to value it's defined benefit liabilities from 30 June 2016
- Discount rate to be based on a portfolio of investments estimated to yield future net cash inflows that would be sufficient to meet accrued benefit payments when they are expected to fall due
- Rate must be current, appropriate to the term of the liabilities and include appropriate allowance for tax and investment expenses (1)
- A range of rates could be used, however government bond yields meets these criteria, is consistent with prior years and AASB119 (so same value appears on government and fund balance sheets).
- Scheme has no assets therefore difficult to justify investment return above government bond yields

- **Recommend continue to use a discount rate based on government bond yields**
- **Consistent with AASB119 and no impact on DBO at 30 June 2016**

(1) Draft guidance note issued by the Actuaries Institute regarding- AUSTRALIAN ACCOUNTING STANDARD AASB 1056 SUPERANNUATION ENTITIES

NTGPASS - Salary Increases

Salary increases have been slightly lower than expected for continuing members and future expectations would be for lower salary increases, so we recommend reducing the long term rate by 0.5% to 4.0% per annum

- The current assumption is 4.5% per annum
- Over the past 3 years the average increase in benefit salary for current members has been 2.4% per annum
- The lower than expected increases is driven by AWE, as benefit salary is an AWE indexed average. NT AWE was 3.5% as at 30 June 2016, so salaries have increased largely in line with expectation but AWE has fallen quite dramatically over the period
- NTSSS average salary increases (not indexed) for same members were 3.7% per annum over the past 3 years
- We recommend reducing the long term salary increase assumption by 0.5% to 4.0% per annum, and continuing to use 3.0% for 2016/17 in line with the EBA

For current members at	30 June 2013	30 June 2014	30 June 2015	30 June 2016
Average Benefit Salary	$95,345	$94,909	$96,593	$103,508
Average increase for current members only	1.4%	(0.4%)	1.8%	7.0%
NT AWE increase	5.7%	2.5%	1.3%	3.5%
Average NTSSS Salary (no AWE indexation) for NTGPASS members	$92,111	$95,454	$98,649	$102,928
Average increase for current members only	4.5%	3.7%	3.3%	4.2%

- **Suggest we reduce long term salary inflation rate by 0.5% to 4.0% per annum (3.0% for 2016/17)**
- **Impact is to reduce the DBO at 30 June 2016 by $64 million, or by 6.0%.**

NTGPASS – Experience 2012 – 2015

The actual number of exits were slightly higher than expected (106%)

Exit Type	Actual (A)	Expected (E)	A / E
Age Retirements	496	505	98%
Deaths	14	12	116%
Invalidity Retirements	21	21	99%
Resignations	262	278	94%
Retrenchments	72	0	0%
Transfers	1	0	0%
Total	**866**	**817**	**106%**

Please note that we made no allowance for retrenchments and transfers in 2013 and intend to do the same for this review, because these are ad-hoc events and subject to the control of the employer

NTGPASS - Rates of retirement

Overall the rates of retirement have been in line with expected, so we recommend retaining the rates going forward

Summary of actual v/s expected rates of retirement

Findings

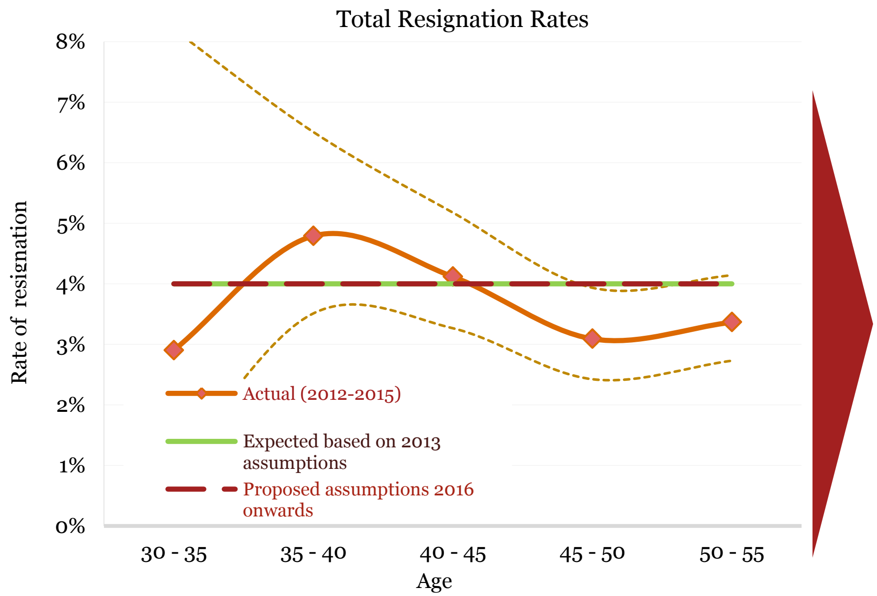
- Actual (A) = 496, Expected (E) = 505, A/E = 98%
- We propose to retain rates for all members leaving at all age
- In 2013, we increased the age members are expected to retire and we can see the trend continuing, especially if investment markets remain volatile

- **Recommend to retain for all ages**
- **Updated rates are the same as in 2013 - No impact on DBO at 30 June 2016**

NTGPASS - Rates of resignation

The rates of resignation have been fairly consistent with expected rates, and as membership ages, it becomes less material. Hence we recommend rates be retained at 4% per annum

Summary of actual v/s expected rates of resignation



Findings

- Actual (A) = 262, Expected (E) = 278, A/E = 94%
- Overall the rates of resignation have been fairly close to expected (94%)
- The rate of resignations are above 4% pa for age band 35-40 but below for ages over 40
- As these rates offset each other and are not very material, we propose to retain the rate of resignation at 4% pa

- **Recommend retain rate of resignation at 4% per annum for all ages**
- **Updated rates are the same as in 2013 - No impact on DBO at 30 June 2016**
- **Rules are assumed to be same for males and females**

NTGPASS - Rates of deaths and invalidities

We recommend retaining the death rate and invalidity rate at 40% and 70% of latest population tables respectively

Rates of Death

- Actual (A) = 14, Expected (E) = 12, A/E =116%
- Broadly consistent with the expected deaths
- Hence, we recommend retaining the assumption at 40% of the most recent mortality table*

Rates of Invalidity

- Actual (A) = 21, Expected (E) = 21, A/E =99%
- In line with the expected invalidities
- Hence, we recommend retaining the assumption at 70% of the most recent mortality table *

* In 2013, we used Australian Life Table (ALT) tables 05 – 07 with the 25 year improvement factors published by the Government Actuary. For this review, we intend to use the latest population tables ALT 10-12 with the allowance for the latest 25 years improvement factors

- **Recommend maintain death rates at 40% of population mortality rates (use ALT 2010-12 with 5 year improvements in line with 25 year improvement factor table)**
- **Recommend maintain invalidity rates at 70% of the population mortality rates (use ALT 2010-12 with 5 year improvements in line with 25 year improvement factor table**
- **Although the updated mortality rates are lower than in 2013 (so expect marginally fewer deaths and invalidities), it does not have a material impact on the DBO**

NTGPASS – Summary of changes and their impact

The overall impact is to reduce the liabilities due to the lower salary increase expectations. The impact is approximately $40 million or 4%.

Assumption	Change and Impact
1 **Salary Inflation**	• Salary increase reduced by 0.5% to 4.0% pa (3.0% for 2016/17) • Impact of using a salary increase of 4.0% pa is a **de**crease in the liabilities at 30 June 2016 of $64 million (6%)
2 **Rates of retirement**	• No change to retirement rates by age compared to our last review (in 2013) • No impact on the liability
3 **Rates of resignation**	• Retain rates at 4% per annum for all ages • No impact on the liability
4 **Rates of death and invalidity**	• Updated to the most recent mortality tables and retain adjustment factors • No material impact on the liability

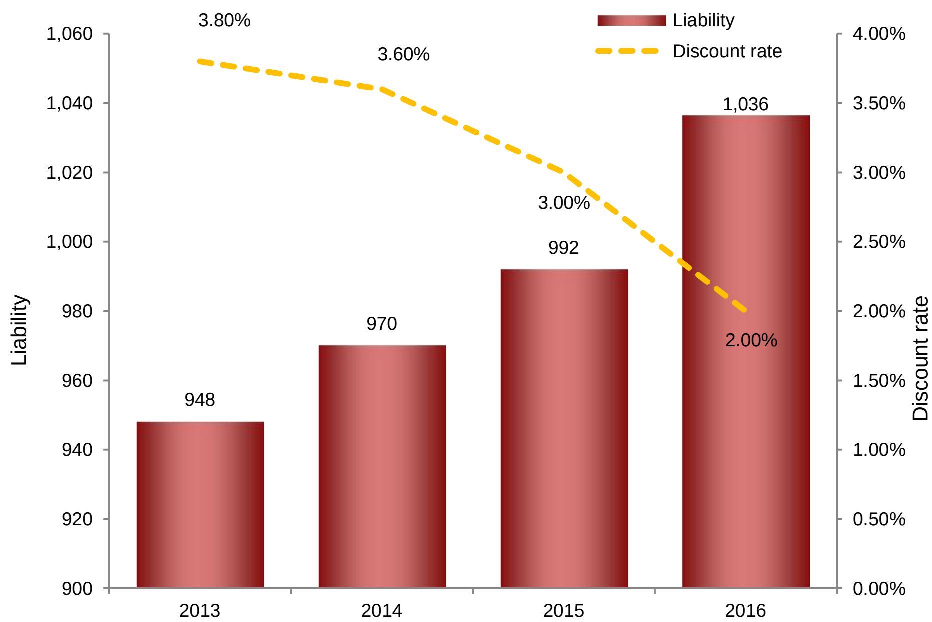
Which gives....

Total Impact	• Reducing salary increase assumption to 4.0% per annum would **de**crease the liabilities at 30 June 2016 by $64 million or 6% • Other changes have no material impact

NTGPASS – Financial Assumptions

The discount rate has decreased by 1.8%, from 3.8% per annum to 2.0% per annum in 2016 and salary increase assumption has decreased from 4.5% per annum to 3.0% for the first year and 4.0% thereafter in 2016

Historical liability and discount rate



Change in financial assumptions

- The discount rate has a significant impact on the liability
- The discount rate has decreased from 3.8% pa in 2013 to 2.0% pa in 2016
  - The fall is due to the reduction in yields on government bonds which are required to be used for the Territory's accounting liabilities
  - This causes the liability to increase by $142 million

Offset by;

- The salary increase assumption has decreased from 4.5% pa to 3.0% for the first year and 4.0% pa thereafter in 2016. This causes the liability to decrease by $64 million

Accrued and vested benefit liabilities

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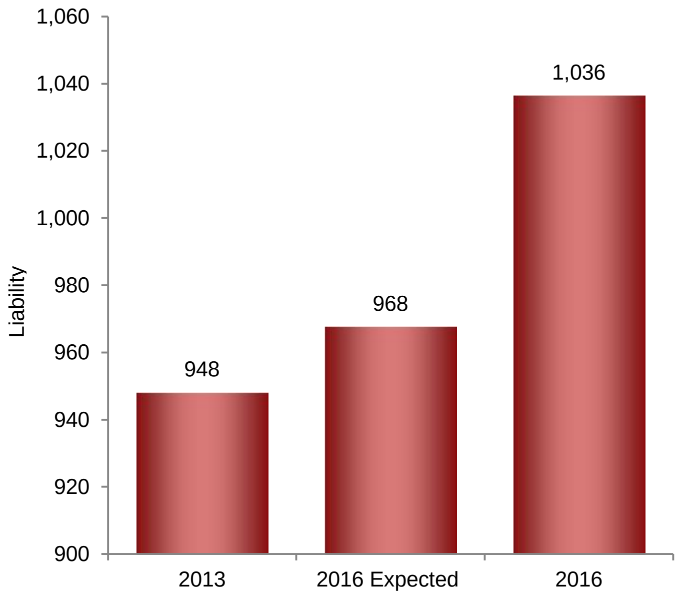
NTGPASS Accrued Liability Results

The accrued liabilities increased by $88 million or 9% since 2013, and by $68 million or 7% more than expected mainly due to the change in discount rate.



- The accrued liabilities increased by 9% over the past three years.
- The main reasons for the increase are:
  - Expected increase ($20 million or 2%)
  - Decrease in discount rate from 3.8% pa in 2013 to 2.0% pa in 2016 ($142 million or 15.0%)
  - partially offset by;
  - Decrease in salary increase assumptions from 4.5% pa to 3.0% pa for the first two years and 4.0% pa thereafter ($64 million or 6.7%)
  - Actual salary increases lower than expected ($10 million or 1.1%)
- The Vested benefits as at 30 June 2016 were $887 million which is a decrease of $28 million since 2013 when they were $915 million.

Risks faced by the Scheme

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NTGPASS Key Risks

The key risk faced by the scheme/employer is actual salary increases significantly exceeding the expected salary increases.

Level of risk

	Comments
Salary Increase Risk	• Employer has control over this • Historically, been higher than expected
Legislative Risk	• Continual changes, such as increasing SG and APRA prudential standards could increase costs • However, better governance may reduce risk
Unfunded risk	• Lack of funding by the government (ie unable to meet payments) • This is especially the case if unexpected member movements and a requirement for large contributions

Sensitivity

On accrued liability of $1,036 million

- 1% pa increase in discount rate: $953m (8%)
- 1% pa higher salary increases: $1,148 m 11%

Insurance

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NTGPASS Insurance

The scheme self-insures death and TPD benefits, and is backed by the government.
In our opinion, these arrangements are adequate and in the members best interests.

Insured Benefits

- The self insured benefits are the future service component of the death and disability benefits.
- The benefits are then adjusted to take into account
  a) No dependents
  b) Workers compensation benefits are payable.

Main Risks

- Normal variations in experience pose little risk
- The main risk is high unexpected claims due to pandemics or other catastrophes

Risk Mitigants

- The benefits are underwritten by the government, so little risk of genuine claims not been paid
- Also government has liability for pensioners in other schemes, who act as a hedge, as they are likely to also die in the event of a pandemic/catastrophe

Impact of higher claims

- Total self-insured benefits = $573 million (less than vested)*
- Expected annual cost of claims = $0.84 million
- If claims doubled the cost would be approximately $1.7 million (approx 0.2% of liabilities), which equates to 0.02% change in salary increases and the discount rate

* The vested benefit is higher than the total self-insured benefits as the insured benefits are adjusted to take into account conditions stated above.

Appendices

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A	Reliance and limitations
B	Summary of valuation methodology
C	Summary of benefits
D	Summary of assumptions
E	APRA Reporting

APPENDIX A: Reliance and Limitations

- Our work has been conducted for the sole use and benefit of Northern Territory Superannuation Office. No third party may use or rely on our work for any purpose.
- No oral or written reference to the content of this report may be made to any third parties without our prior written consent. We may, at our discretion grant or withhold our consent or grant it subject to conditions.
- Our responsibilities and liabilities are to Northern Territory Superannuation Office in the context of the use of our report for the purpose set out above. We do not accept any liability or responsibility in relation to the use of our report for any other purpose.
- The advice contained in this report is based on the circumstances of Northern Territory Superannuation Office as a whole. It does not take into account the specific circumstances of any individual.
- This report must be read in its entirety. Individual sections of this report could be misleading if considered in isolation from each other.

APPENDIX B: Summary of Valuation methodology

- A discounted cashflow method has been used to value the past service liabilities relating to members.
- We calculate the accrued lump sum benefit that would be paid to members in each future year in the event that they retire, resign or die.
- The accrued lump sum benefit is calculated as the appropriate percentage (depending on benefit points accrued to date) times the current salary inflated to the expected date of payment.
- The projected benefits are multiplied by the probability that the member does retire, resign or die in each future year. This gives us our expected future cashflow in each year.
- The expected future cashflows are then discounted to the valuation date using the assumed discount rate. The resulting amount is the past service liability.
- The accrued liability is the amount which if invested, together with the interest earned (equal to the discount rate), would be sufficient to meet the expected future cash flows as and when they fall due.

APPENDIX C: NTGPASS Scheme Rules

The benefits provided by NTGPASS are summarised below:

Membership and member contributions

- Closed to new members since 9 August 1999
- Member can retire from age 55
- Members may elect to contribute at: 2%, 3%, 4%, 5% or 6% of their salary.

Benefit points and benefit salary

- 1% of contribution payable for a full year entitles the member to 1 benefit point
- Benefit salary is the average of last 3 years of contribution salary converted to full time equivalent and adjusted for % change in AWE to date of exit.

Retirement Benefit

- Available from age 55
- Lump sum benefit equal to Accrued Employer Component (AEC) + member's accumulation account
- AEC equals 2.5% x total benefit points x benefit salary.

Death and Disability Benefit

- Benefit is equivalent to member's accumulation account + AEC + Prospective Employer Component (PEC)
- PEC equals 17.5% x years of prospective service to age 65 x benefit salary
- PEC begins to phase out after age 50 and is zero at age 60.

Resignation Benefit

- Resignation benefits prior to age 55 are member's accumulation account + adjusted AEC
- AEC equals 2.5% x total benefit points x benefit salary x (M-60)/60
- M equals months of contributory membership
- If M <60, no AEC is payable
- If M>120, full AEC is payable.

APPENDIX D: NTGPASS – Summary of assumptions

The 2013 assumptions, along with those used for 2016 are detailed below

Rates of retirement (per 100,000 people)

Age	2013 Assumption	2016 Assumption	Change (%)
55	6,000	6,000	0%
56	6,000	6,000	0%
57	6,000	6,000	0%
58	6,000	6,000	0%
59	8,000	8,000	0%
60	20,000	20,000	0%
61	15,000	15,000	0%
62	12,000	12,000	0%
63	15,000	15,000	0%
64	20,000	20,000	0%
65	22,000	22,000	0%
66	22,000	22,000	0%
67	22,000	22,000	0%
68	22,000	22,000	0%
69	22,000	22,000	0%

Rates of resignation (per 100,000 people)

Age	2013 Assumption	2016 Assumption	Change (%)
30	4,000	4,000	0%
35	4,000	4,000	0%
40	4,000	4,000	0%
45	4,000	4,000	0%
50	4,000	4,000	0%
55	4,000	4,000	0%

MALES - Rates of death (per 100,000 people)

	2013 Assumption (1)	2016 Assumption (2)	Change (%)
20	23	20	-13%
25	28	23	-19%
30	35	30	-14%
35	42	39	-7%
40	52	50	-3%
45	69	70	1%
50	99	102	3%
55	145	153	6%
60	227	226	-1%

FEMALES - Rates of death (per 100,000 people)

	2013 Assumption (1)	2016 Assumption (2)	Change (%)
20	10	9	-3%
25	11	10	-10%
30	14	13	-8%
35	19	19	0%
40	28	29	3%
45	43	44	2%
50	64	65	2%
55	91	94	3%
60	146	142	-3%

(1) 40% of ALT 2005-07 with improvement to 2013
(2) 40% of ALT 2010-12 with improvement to 2016

MALES - Rates of disability (per 100,000 people)

	2013 Assumption (1)	2016 Assumption (2)	Change (%)
20	41	36	-13%
25	50	40	-19%
30	61	53	-14%
35	74	68	-7%
40	91	88	-3%
45	121	122	1%
50	173	179	3%
55	253	267	6%
60	398	396	-1%

FEMALES - Rates of disability (per 100,000 people)

	2013 Assumption (1)	2016 Assumption (2)	Change (%)
20	17	16	-3%
25	18	17	-10%
30	24	22	-8%
35	34	34	0%
40	50	51	3%
45	75	77	2%
50	111	114	2%
55	160	165	3%
60	255	248	-3%

(1) 70% of ALT 2005-07 with improvement to 2013
(2) 70% of ALT 2010-12 with improvement to 2016

NTGPASS Assumptions

The financial assumptions are stated below:

Financial Assumptions

Assumption	2016	2013
Discount rate	2.0% pa	3.8% pa
Salary Inflation	3.0% pa for first year and 4.0% pa thereafter	4.5% pa
Inflation(CPI)	2.5% pa	2.5% pa

- This is an unfunded scheme so interest is not earned
- We have used a salary increase rate of 3.0% per annum for the first year and 4.0% per annum thereafter, as confirmed by the Department of Treasury and Finance
- Discount rate is based on yield on a 10 year Commonwealth government bond
- Discount rate is consistent with that required to be used for accounting purposes (AASB119).

APPENDIX E: APRA Reporting

Below is a summary of the data we understand you require for APRA reporting.

SRS 160.0 Defined Benefit matters	**$000**
1.1. Accrued Benefits (DB interests)	1,036,371
1.2. Vested Benefits (DB interests)	887,320
1.5. Date of defined benefit measures	30/06/2016
3.1. Long term investment return assumption	N/A
3.2. Long term wage growth assumption	4.0% pa
3.3. Long term consumer price index assumption	2.5% pa
3.4. Date of actuarial projection assumptions	30/06/2016
4.1. Weighted average term of DB liabilities	9 years
4.2. Date of weighted average term calculation	30/06/2016