

Actuarial Review of administration,  
benefits and levy rate

of the

NT Build Construction Industry Long  
Service Leave Scheme

February 2017

The Hon. Michael Gunner MLA  
Chief Minister  
Minister for Northern Australia  
Minister for Trade, Business and Innovation  
Parliament House  
State Square  
DARWIN NT 0800

Dear Chief Minister

**NT Build Actuarial Review**

I am pleased to submit to you a report on my review of NT Build.

This review has been performed at your request in accordance with the provisions of Section 91(2) of the Construction Industry Long Service Leave and Benefits Act 2005.

In accordance with Section 91(6) of the Act, a copy of this report must be tabled in the Legislative Assembly within 6 sitting days after receiving this report.

Yours sincerely



John Rawsthorne  
Fellow of the Institute of Actuaries of Australia

1 February 2017

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## **Executive summary**

This actuarial investigation of the NT Build Portable Long Service Leave Scheme (NT Build) has been carried out at the request of The Honourable Michael Gunner MLA, Chief Minister and Minister for Trade, Business and Innovation. The conduct of the actuarial valuation is governed by section 91(2) of the Construction Industry Long Service Leave and Benefits Act 2005 (the NT Build Act).

NT Build was established on 1 July 2005 to provide portable long service leave benefits to construction industry workers in the Northern Territory. The scheme provides a long service leave benefit of, broadly speaking, 13 weeks of leave after 10 years of construction industry service. The fixed payment rate is set by the NT Build Board from time to time, having regard to the average weekly ordinary time earnings for the construction sector.

### Administration and benefits

Employee service and benefit data are recorded on a central database. The scheme separately identifies service credits for Inpex workers, as is appropriate. The overarching trend in the service reporting data is one of slightly declining overall service reports from scheme commencement to 2010, but then a gradual increase in reported service until 2012. From 2012 onwards the Inpex project has dramatically boosted reported service credits, and the higher level of reported credits is expected to persist for the duration of the Inpex construction phase. The administration of the membership database appears to be appropriate.

The benefit provided by NT Build is broadly comparable to the benefits available in interstate schemes of a similar nature. In NT Build the benefit is based on a single benefit rate which is set by the NT Build Board. This is administratively simple, without introducing significant inequity between scheme members. I consider the NT Build Board practice of linking the benefit rate for all scheme members to Australian construction industry ordinary time earnings to be appropriate.

The NT Build Board has adopted a long term growth-oriented investment policy. I consider that the investment objectives for NT Build and the current investment strategy and allocation are appropriate and consistent with the overall purpose of the scheme. NT Build is appropriately managing liquidity demands as benefit payments increase.

### Scheme financial position and projection

The accrued liability disclosed in financial statements as at 30 June 2016 was \$62.612 million, compared to net assets available to pay benefits at that time of \$80.182 million. The table below shows a scheme financial projection. Details of the projection including a discussion of uncertainty and alternative scenarios are included at Section 3.4 of this report. All values are in inflated dollars of the projection year.

*Financial projection of NT Build scheme 2016-2026*

Financial year	Assets e.o.y. \$m	Levy income \$m	Benefit payments \$m	Admin expense \$m	Investment earnings \$m	Accrued liability e.o.y. \$m	Surplus e.o.y. \$m
2016	80.2					62.6	17.6
2017	81.9	2.2	4.2	1.4	5.1	68.4	13.4
2018	80.1	2.3	7.7	1.5	5.1	71.1	9.0
2019	93.2	17.4	8.2	1.5	5.5	69.4	23.9
2020	93.5	2.5	6.5	1.6	5.9	69.7	23.8
2021	94.6	2.6	5.8	1.6	5.9	71.2	23.4
2022	95.8	2.7	5.7	1.7	6.0	73.0	22.8
2023	97.3	2.8	5.6	1.8	6.1	75.3	22.1
2024	99.9	2.9	4.7	1.8	6.2	78.9	21.0
2025	102.1	3.0	5.2	1.9	6.4	82.3	19.9
2026	104.1	3.1	5.7	2.0	6.5	85.5	18.6

The scheme currently has a moderate surplus that is expected to decline in the next two years. The expected decline in surplus is mostly because Inpex liabilities are accruing rapidly, whereas no levy income is being received in respect of the Inpex project. A substantial levy amount, probably in the range \$10-25 million, will be determined by the relevant Minister and become payable by the Inpex developer at completion of the Inpex construction project. A larger surplus is likely to be restored at the point Inpex levy is received.

There is some chance that the scheme may fall into deficit in the next two years. However I expect that even if this occurs a surplus will be restored on receipt of Inpex levy.

Levy Rate

The NT Build scheme levy rate is collected from developers to fund scheme benefits and administrative costs. The break-even levy rate is estimated to be in the range 0.19-0.23% of leviability activity, which is higher than the current levy rate of 0.1% of leviability activity. The scheme currently has a surplus and appears able to support a levy rate below the break-even rate for several years. The current rate of 0.1% of leviability activity may not be sustainable in the longer term.

**I recommend** that the levy rate remain unchanged at 0.1% of leviability activity as a result of this review.



John Rawsthorne  
Fellow of the Institute of Actuaries of Australia  
1 February 2017

## Introduction

This actuarial investigation of the NT Build Portable Long Service Leave Scheme (NT Build) has been carried out at the request of The Honourable Michael Gunner MLA, Chief Minister and Minister for Trade, Business and Innovation.

The conduct of the actuarial valuation is governed by section 91(2) of the Construction Industry Long Service Leave and Benefits Act 2005 (the NT Build Act). Specifically, the review is of:

- the administration of the scheme (including any financial aspects of that administration);
- the methods used in working out long service leave benefits;
- the levy rate.

I have not been asked to consider any other matters as part of this review.

The previous similar review was conducted by me as at 30 June 2014, and presented in a report to The Honourable Peter Styles MLA, Minister for Business dated 16 January 2015 (the 2014 report).

This report is Prescribed Actuarial Advice. It complies with the Code of Professional Conduct of the Institute of Actuaries of Australia, issued in November 2009.

## Background

NT Build was established on 1 July 2005 to provide portable long service leave benefits to construction industry workers in the Northern Territory.

The scheme provides a long service leave benefit of, broadly speaking, 13 weeks of leave after 10 years of construction industry service. The fixed payment rate is set by the NT Build Board from time to time, having regard to the average weekly ordinary time earnings for the Australian construction sector. It is currently \$1,276/week.

The scheme is funded by a levy on construction activity. The levy is currently 0.1% of the value of construction projects within the Northern Territory, with exemptions for projects under \$1M in size and also for single detached dwellings, as well as a separate levy mechanism for projects over \$1 billion in size. The levy has reduced over time, but has been unchanged at 0.1% of project value since 7 April 2014.

NT Build is a portable long service scheme providing benefits similar to those in construction industry schemes in all other Australian states. Under the National Reciprocal Agreement, registered Northern Territory workers are able to have construction industry service accrued in any State or Territory combined towards a long service leave entitlement. This is a significant element to the NT Scheme, with many members of the scheme also having interstate service and a significant proportion of all benefit payments involving interaction with interstate schemes.

The accrued liability disclosed in financial statements as at 30 June 2016 was \$62.612 million, compared to net assets available to pay benefits at that time of \$80.182 million.

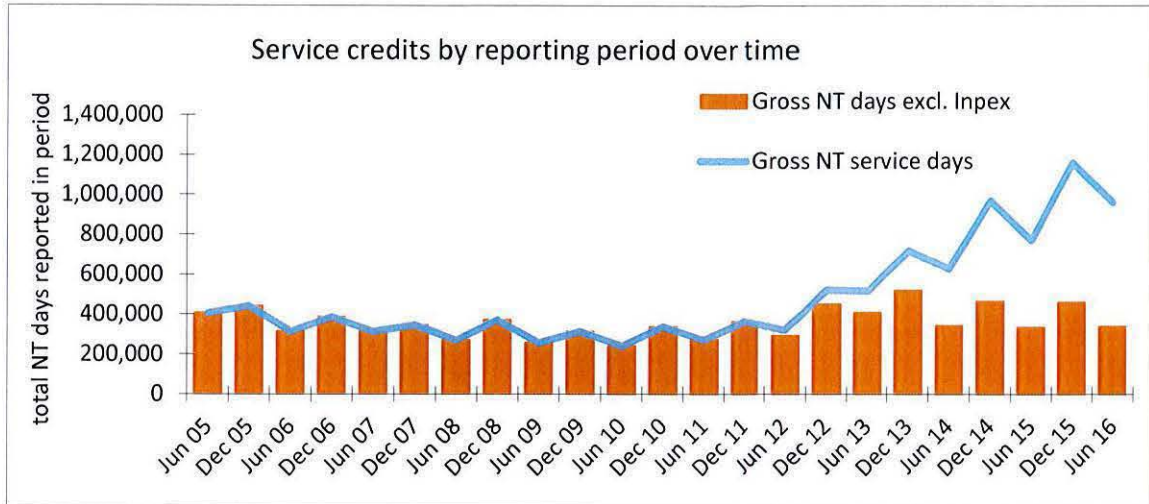


## Part 1 - ADMINISTRATION

### 1.1 Worker data

#### Reported service

Employee service and benefit data are recorded on a central database. Employers submit returns to NT Build half-yearly, advising days of service for all registered employees. The historical reported service days are summarised in the chart below.



Further detail on service credits including a description of data and assumptions made in respect of data is supplied in Appendix A to this report.

The overarching trend in the service reporting data is one of broadly stable service credit reporting over time, but with a highly significant Inpex effect in recent years. There were declining overall service reports from scheme commencement to 2010, but then a gradual increase in reported service until 2012. From 2012 onwards the Inpex project has dramatically boosted reported total service credits, and the higher level of reported credits is expected to persist for the duration of the Inpex construction phase. Non-Inpex service credits peaked in 2013 and have fallen slightly since, however non-Inpex service reports remain higher than the post-GFC period (about 2008-2010), and are broadly in line with longer term scheme history.

#### Worker inactivity

The scheme has now been operating for twelve years and there is a considerable number of workers who recorded service in the early years of the scheme, but for whom no service has been reported in at least the last four years. Workers have a right to advise the scheme, even after long breaks of service, that they have had continuing interstate service and may lodge a benefit claim with the scheme in such cases. In most states a four year threshold serves as the point at which the scheme can assume there will be no further liability in respect of a worker. However as NT Build workers typically have worked and will work in more than one state there is a moderate likelihood that even deregistered workers will claim on the scheme in future. This is one of several areas where NT Build experience is different to typical interstate scheme experience.

## 1.2 Financial data

### Income and expenditure

Income statements based on NT Build accounts are shown below. I have reformatted the accounts to emphasise the “net assets available to pay benefits”, benefit liabilities and the surplus/deficit arising.

	1/7/05- 30/6/08	1/7/08- 30/6/11	1/7/11- 30/6/14	2014/15	2015/16
	\$'000	\$'000	\$'000	\$'000	\$'000
NET ASSETS at start of period	0	12,819	41,487	73,732	80,303
INCOME—					
Levy Income	16,646	30,120	25,550	2,425	3,665
Net Investment Revenue	-418	3,279	12,974	6,857	203
Other Revenue	85	161	620	735	2,127
Total Income	16,313	33,560	39,144	10,017	5,995
EXPENDITURE—					
Benefit payments	376	1,320	2,623	2,135	4,729
Administration and other Costs	3,118	3,572	4,275	1,311	1,387
Total Expenditure	3,494	4,892	6,898	3,446	6,116
NET ASSETS available to pay benefits at end of period	12,819	41,487	73,733	80,303	80,182
ACCRUED LSL BENEFIT LIABILITY at end of period	7,621	20,907	38,434	45,341	62,612
SURPLUS	5,198	20,580	35,299	34,962	17,570

Levy income was originally the largest revenue item. However the levy rate has now dropped substantially from the original rate of 0.5% of leviable activity to the current level of 0.1% of leviable activity, with an expansion of exemptions, meaning that levy income is currently a less significant component of overall revenue.

An initial levy amount of \$3M was received in respect of the Inpex project shortly after project commencement, but no further levy income has been received. There is a substantial accrued liability for Inpex service which will probably result in receipt of levy income in future, but the amount is not quantifiable with sufficient certainty and so no accrued receivable for Inpex levy income is recorded in scheme accounts. The drop in scheme surplus between 2015 and 2016 is partly attributable to an increase in accrued Inpex liability, with no offsetting levy asset either received or recorded as receivable in scheme accounts.

With the passage of time and accumulation of assets to meet future liabilities, investment returns have increased in significance. However investment income is quite volatile from year to year, and the operating result each year is heavily influenced by the level of investment income.

Benefit payments have grown significantly in recent years. I expect that benefit payments will continue to increase in the coming years. Most workers from the Inpex project will inevitably leave the NT over the next 1-2 years, and many of these workers will be able to claim a benefit by combining NT service credits with previous interstate service credits.



Benefit liabilities in the above table are as per annual financial reporting, and are calculated in accordance with Accounting Standard *AASBI37 Provisions, Contingent Liabilities and Contingent Assets*. The nominal value of service credits at 30 June 2016 was \$77.6M, although the level of vested benefits available to be claimed in service (based on NT service credits and a threshold of 2200 service days) was only \$6.3M.

Administration expenses have been relatively stable in real terms since inception, and are now at about \$1.3-1.4 million per annum. For 2016 other small state schemes (SA, Tasmania and ACT) have had expenses \$1.3-2.0 million. NT expenses are similar to other small state construction industry schemes, and appear to be stable even with moderate movements in membership. Larger state schemes (NSW, Qld, WA) have had expenses in the range \$5-10 million pa in recent years, in respect of much larger scheme memberships. It is evident that there is a large component of expense in NT Build which is fixed and independent of scheme size, and only a relatively small component which is related to the marginal effort of processing additional members or levy payers. Expenses are a significant fraction of overall scheme costs.

### Investment policy

The NT Build Board has an investment policy, last updated in February 2016. The policy sets out the core purpose of NT Build and the range of investable assets, and sets out investment objectives. The stated investment objectives are:

*To maximise returns, subject to:*

- *Achieving a return of at least CPI + 3% as measured over rolling 5-year periods*
- *Limit the probability of a negative annual return to one in every 4 years (or, equivalently 25%)*
- *A high probability that the Scheme will maintain a solvency greater than 100%*

The first and second investment objectives together consider risk and return. The return objective is related to CPI. This is a reasonable goal, given that the liabilities of the scheme are related to construction industry wages, which will in turn also be broadly linked to CPI. This matching of assets and liabilities (albeit less than perfect matching) is a useful way of reducing volatility in the surplus position of the scheme. The return objective has a medium term time-frame, which is suitable given the relatively long expected term to payment of liabilities and the long term nature of the scheme. The risk objective, of a limited number of negative returns over time, is consistent with a more general statement of the volatility in investment returns that is acceptable in this context. Given that the scheme has a relatively long investment time frame and also a financial stabiliser in the form of the levy rate (which may be adjusted up or down in the medium term), the scheme can bear moderate investment volatility. The risk goal of no more than one negative return in each four years appears to be reasonable.

The risk and return goals set out in the objectives are consistent with a growth-type investment strategy, where the proportion of assets invested in growth investment classes (shares, property) is in the range 60-80%, while the assets invested in defensive investment classes (cash, high rated bonds) is in the range 20-40%. Based on historical data the risk and return objectives could be expected to be achieved in the medium term with a growth-type investment strategy. This strategy is also consistent with the typical long term investment strategy for superannuation schemes (which typically have similar investment goals).

The third investment objective is not something which can be directly controlled by the investment strategy. Scheme solvency is a function of levy rate, membership, benefit levels and many other factors as well as investment strategy. Nonetheless it is useful to include scheme solvency in the objectives as a reminder of the link between assets and liabilities of the scheme. Also scheme solvency considerations may feed back into the adopted investment strategy, eg by adopting a more conservative strategy when the scheme has lower surplus and hence less ability to withstand investment losses.

I consider that the investment objectives for NT Build are appropriate and consistent with the overall purpose of the scheme.

#### Current investment strategy and past performance

The majority of NT Build investments are with a JANA multi-asset multi-manager investment product (the JANA Moderate Trust). This investment provides exposure to a wide range of investments, with a growth-oriented profile and sufficient flexibility to meet NT Build's investment and liquidity needs. NT Build also holds a small amount in term deposits with People's Choice Credit Union.

While the NT Build Board has adopted a long term growth-oriented investment policy, the current position is slightly different. Growth assets should make up 60-80% of total investments in the long term to achieve the investment objectives. As at 30 June 2016 growth assets made up about 60% of total investments, at the conservative end of the long term objective. About 9% of assets were invested in cash or term deposits at that date, reduced from about 16% two years prior. About 28% of investments are in bonds and similar defensive investments.

Since 30 June 2016 the scheme has redeemed part of the term deposit holding, and this has been used to make benefit payments. Thus the overall investment strategy has become slightly more weighted towards the Jana investment, and the proportion of assets held in growth investments has increased slightly. This is reasonable, and the current investment profile sits within the range of the investment policy.

Actual investment returns on NT Build assets since scheme inception are shown below.

Financial year	Investment return
2005/06	3.6%
2006/07	6.2%
2007/08	-7.2%
2008/09	-4.0%
2009/10	6.7%
2010/11	6.5%
2011/12	3.1%
2012/13	8.9%
2013/14	9.6%
2014/15	9.3%
2015/16	0.3%

The five year money-weighted return has been 6.7% per annum and there have been no negative annual returns in those five years. There are several relevant benchmarks:

- The scheme has had two negative returns in eleven years of experience. If the chance of a negative return in any one year is 25% then the chance of 2 or more negative

returns in 11 years, is (assuming returns in each individual year are independent of each other and applying a binomial distribution) about 80%. Similarly, the chance of no negative returns in 11 years is about 4%. Using this framework, two negative returns in eleven years of experience is not inconsistent with the risk objective of limiting negative returns to 1 in 4 years on average.

- CPI growth over recent years has been in the range 2-3% per annum when considered over rolling five year periods, although current CPI inflation is currently slightly below 2%. The investment return benchmark is to exceed inflation by 3% over rolling five year periods. This goal has been met in recent years.
- Typical growth-oriented investment strategies across a range of fund managers and investments have achieved returns in excess of inflation + 3% over the 5 years to 30 June 2016. The median return for growth oriented superannuation investments (60-80% growth assets, i.e. typically more growth-oriented than NT Build over recent years) was 8.2% per annum for the 5 years to 30 June 2016 (Chant West Super Funds survey, [www.chantwest.com.au](http://www.chantwest.com.au)). NT Build, when compared to a typical growth-oriented investor, has had a more conservative investment strategy, and has consequently achieved a lower return with lower volatility in return.

The NT Build Board continues to explicitly consider the defensive/growth allocation, with a view to maintaining the asset allocation set out in the investment policy in the medium term.

### Liquidity

The scheme is currently paying out an increasing amount in benefits, while at the same time receiving relatively small levy income amounts. This has required active cash flow management by NT Build in recent months to ensure that there is sufficient cash to pay benefits as they are claimed. Cash flow is also lumpy as interstate scheme reimbursements (which are significant in the NT Build context) happen intermittently.

NT Build has reduced its holding of Term Deposits in recent months to meet cash flow requirements. This has had the effect of slightly altering the overall investment allocation more towards growth investments, as discussed above.

The change in investment allocation in recent months is not highly significant, but it will probably be necessary in coming years for the scheme to redeem some of its funds invested via Jana. Jana has advised that they do not anticipate any liquidity constraints in NT Build's investments with Jana, and so, apart from the need to provide a small period of notice, there should be no practical difficulty in continuing to meet cash flow requirements associated with benefit payments.

## Part 2 – BENEFIT DESIGN

The scheme provides a benefit of 13 weeks of leave after ten years of full time service, or earlier payment available in certain circumstances on leaving the construction industry. The benefit design is similar to other portable LSL schemes around Australia, although some schemes provide lower benefits (notably Queensland and WA, which provide roughly 2/3 of the level of benefits of NT Build). NT Build's level of benefit appears reasonable.

NT Build defines a full year of service as 220 credited days of service. Up until 2014 a worker was required to work 260 days to receive a full year of service credit, but that requirement was relaxed in 2014, and reduced to 220 days. This definition is consistent with the majority of interstate schemes (excepting SA and Tasmania, which use 260 days). The transition from a 260 day definition to a 220 day definition occurred smoothly. There were some instances where workers were able to claim small additional benefits as a result of the definition change.

### Benefit Rate

One particular feature of the NT Build benefit design is the specification of the benefit rate used for determining benefits. In most workers in other portable LSL schemes in Australia the benefit is linked to the actual wages of the individual worker. There is considerable effort expended by some schemes in collecting and verifying salary data. In NT Build the benefit is based on a single benefit rate which is set by the NT Build Board. In my opinion the benefit of administrative simplicity of the NT Build approach outweighs concerns about equity between individual workers.

The benefit rate is currently set by the NT Build Board based on average Australian construction industry ordinary time earnings. The rate is currently set at 85% of ordinary time earnings, and was increased to \$1,276 per week from 1 July 2016. The full history of the benefit rate and Australian construction industry ordinary time earnings is set out below

Date	AWOTE (construction)	% change	Benefit Rate	% change	Ben Rate as %age of AWOTE
30 June 2006	942.00		\$810/wk		86%
1 July 2007	987.90	4.9%	\$867/wk	7.0%	88%
1 July 2008	1062.70	7.6%	\$927/wk	6.9%	87%
1 July 2009	1164.00	9.5%	\$1022/wk	10.2%	88%
1 July 2010	1265.70	8.7%	\$1076/wk	5.3%	85%
1 July 2011	1336.80	5.6%	\$1136/wk	5.6%	85%
1 July 2012	1367.50	2.3%	\$1151/wk	1.3%	84%
1 July 2013	1418.70	3.7%	\$1206/wk	4.8%	85%
1 July 2014	1450.50	2.2%	\$1233/wk	2.2%	85%
1 July 2015	1475.10	1.7%	\$1254/wk	1.7%	85%
1 July 2016	1500.60	1.7%	\$1276/wk	1.8%	85%

The benefit rate sits within the range of average benefit rates of the interstate construction industry schemes, and appears to be appropriate. The linkage to Australian construction wages will be more stable over time than a direct linkage to NT construction wages. I consider the NT Build Board practice of linking the benefit rate to Australian construction industry ordinary time earnings to be appropriate.

The rate of growth in the benefit rate has been about 4.7% per annum since scheme commencement, although growth has slowed and has been similar to CPI growth in recent years.

### National Reciprocal Agreement

A National Reciprocal Agreement has been entered into by every state/territory based construction industry portable LSL scheme to enable interstate construction work to count towards a worker's long service leave.

In most states the interstate component of benefit claims is minor. However in NT a high proportion of all workers are likely to have worked in interstate schemes, or are likely to do so in future. As an indication of the heavy weighting towards interstate or transient workers in the NT industry, during 2015/16, 42% of active workers had an interstate contact location.

Under the National Reciprocal Agreement service credits are recorded in each state scheme as the days are worked in that state, but when a worker makes a benefit claim the service credits across all state schemes are aggregated and the worker's entitlement to a benefit is assessed. The actual amount of benefit paid is determined based on each state's entitlement rules (e.g. if 30% of service days claimed are from NT, then 30% of the benefit paid will be based on the NT scheme rules and benefit rate, and so on). The entire benefit is paid from the scheme where the claim is lodged (typically the state where the worker last accrued service), but then that state invoices the interstate schemes for the amounts paid in respect of those schemes.

There would be some benefit, particularly to NT, in having a national on-line service database that made interstate service records available. If such a database was available in real time then benefit claims could be processed more quickly and easily and workers could receive better information about their entitlements. Even if the database was only updated periodically, this would provide significant additional information to NT Build about likely member entitlements and scheme liability.

I understand that there are some privacy difficulties in national data sharing, but also that some schemes, including NT Build, are actively investigating ways of progressing this issue.

## **Part 3 – LEVY RATE**

### **3.1 Levy collection**

NT Build is funded by a levy on construction activity within the Northern Territory. The levy rate is currently 0.1% of project value, with levy exemptions for projects under \$1 million in size, non-profit projects and for free-standing single houses. There is a separate levy mechanism for large projects, discussed below. The levy rate and exemptions may be varied from time to time by regulation.

The levy rate commenced in 2005 at 0.5% of the value of leviable projects. The levy rate was reduced from 0.5% to 0.4% from 1 July 2009, then to 0.3% on 1 April 2012, and most recently to 0.1% of the value of leviable projects from 7 April 2014.

The levy threshold was originally \$0.2 million, so that any project with a lower value was exempt from levy. In April 2014 this threshold was increased to \$1 million. There have been no other changes to thresholds or exemptions during scheme history.

Levy income in the last five complete financial years has been \$12.0M, \$9.6M, \$4.2M, \$2.4M and \$3.7M. Levy income is largely in line with expectations, after adjusting for the reduction in levy rate over recent years. There is moderate volatility in levy income from year to year. As expected, the levy income has been lower in recent years based on a reduction in levy rate from April 2014.

For projects with a value over \$1 billion a different levy mechanism applies to the component of project value over \$1 billion. Only one project, the Inpex project, has reached this \$1 billion threshold since scheme inception. Some observations on the Inpex project are included below.

### **3.2 Inpex-related accruals and levy**

Scheme liability for workers on the Inpex project has a distinct funding mechanism for the component of the project over \$1 billion in size. The over-threshold levy amount is to be determined based on the accruing cost of long service leave benefits to the scheme in accordance with Section 33 of the Construction Industry Long Service Leave and Benefits Act. The funding in respect of the first \$1 billion of the Inpex project has been received by the scheme, with the over-threshold levy to become payable once a determination is made by the Minister regarding the quantum. Inpex has been notified that over-threshold levy will only be assessed and payable at project completion. Meanwhile, the Inpex project is underway and service credits are being accumulated.

In order to track the accrual of long service leave benefits associated with the Inpex project NT Build requests advice from each reporting employer on the split of service credits between service on Inpex-related work and other work in employer data returns. There have been 2.962 million days reported to date and specifically identified as Inpex days, for reporting periods up to June 2016. There will also inevitably be some late reporting of service credits for past periods, but the record of Inpex service days up to 30 June 2016 is likely to be materially complete, with probably less than 0.1 million days remaining to be reported by employers in future in respect of June 2016 and earlier periods. Thus the ultimate number of Inpex service days for pre-June 2016 periods is probably about 3.0 million service days.

The Inpex project is well advanced and construction will probably be finalised in the next 12-18 months. Service days reported in 2015/16 have been around 1.3 million days. Based on my discussions with the NT Build Registrar, Theo Tsikouris, it appears reasonable to adopt future reporting in respect of Inpex at the level of 1.3 million days for 2016/17 and 0.6 million days for 2017/18. This is an uncertain position based mostly on the past reporting patterns for the project and the known progress to date of the project, but I consider this estimate to be broadly reasonable based on media reports about the current Inpex workforce and project progress. The total future reports of 1.9 million Inpex service days could vary substantially up or down, and should be regarded as about 1.9 million  $\pm$  0.5 million days.

The above estimates of Inpex service days for the periods before and after 30 June 2016 do not include any allowance for potential data adjustments that may occur. I expect that there will be scrutiny of Inpex service records prior to any formal determination of Inpex levy amount, and this may change the number of reported service days up or down. The current estimates also do not make any capping adjustments for circumstances where a worker has Inpex and non-Inpex days and a total service of over 220 days in the same year. The estimated number of Inpex service days in this report should not be taken as a precise guide to a future assessment of scheme levy liability payable by the Inpex developer.

I have not undertaken any formal assessment of accrued or total Inpex liability in this review as it would be premature and potentially misleading. The valuation assumptions set out in Appendix B below, which are intended to be generally appropriate for the scheme as a whole, may not be appropriate for an assessment of Inpex levy payable to the scheme. Inpex workers are expected to be shorter serving in the NT than typical scheme members on average, but also to have greater interstate construction industry experience and more future interstate service on average compared to typical scheme members. As more information becomes available on scheme behaviour of the Inpex workers (eg patterns of service reporting, benefit claiming and interstate scheme links), specific assumptions for these workers will be developed. It will also be necessary to develop assumptions about the economic environment that are appropriate at the time for a funding calculation in order to properly assess Inpex levy.

One observation on the levy collection mechanism for large projects is that large projects typically span several years, and by the time the project reaches completion the amount of levy that is due may be quite substantial. For a relatively small scheme such as NT Build, the accrual of a large unfunded liability (albeit with levy likely to be collected at the end of the project) poses a significant cash flow and solvency burden on the scheme. There is also a risk with significant consequences in the case of project developer insolvency prior to levy payment. The scheme will be more stable financially if developers of large projects are required to make progress payments of levy as the project proceeds, no less than once each financial year. These progress payments could be made based on an interim determination by the Minister each year, informed by actuarial advice about likely accruing costs.



### 3.3 Break-even Levy Rate

The break-even levy rate is the rate of levy that would allow levy income in a period to match the accruing costs associated with service in that period. In this context I explicitly exclude any investment earnings on scheme surplus. I also exclude levy income and scheme accruing cost on the component of projects over \$1 billion (such as the Inpex project), as the levy mechanism to fund those accruing costs is separately determined.

#### Accruing service credits and costs

The current level of accrual of eligible service credits (other than Inpex-related credits) in the scheme is around 0.8 million service days pa. I have no reason to assume that the near future will be significantly higher or lower than the recent past, although there has been some variation in the level of service reporting over the history of the scheme. The level of service reporting in the coming years probably lies in the range 0.7-0.9 million days per annum.

I have used the current scheme data and demographic position to estimate the accruing cost for coming years. I have considered active workers, and I have excluded workers with Inpex service credits (who have different demographic characteristics to a typical non-Inpex worker) from the calculations. When considering funding it is sensible to consider a discount rate based on the expected return on actual investments of the scheme. This will explicitly account for expected investment return on assets held to fund the liabilities, rather than effectively assuming that levies received will only earn a very low interest rate return (as occurs when using a risk-free discount rate). I have used a discount rate determined as an assumed future net investment return on scheme investments of 6.5% pa. Appendix B sets out details of the other assumptions and methods underlying this calculation.

Allowing for 0.8 million days of additional credits in the coming year the present value of increase in liability for benefits accruing during the coming year is about \$3.3 million. If underlying service levels are at 0.7 million days per annum then accruing liability will also be lower, at about \$2.9 million per annum. If higher, at 0.9 million days, the accruing liability will be about \$3.7 million per annum. It is reasonable to characterise the accruing cost in the scheme as lying in the range \$2.9-3.7 million per annum before expenses on this basis.

The levy is required to fund scheme operating expenses as well as accruing benefits. The operating expenses are around \$1.3-1.4 million per annum currently. Thus the total amount required to be funded by levy each year is expected to be around \$4.2-5.1 million per annum.

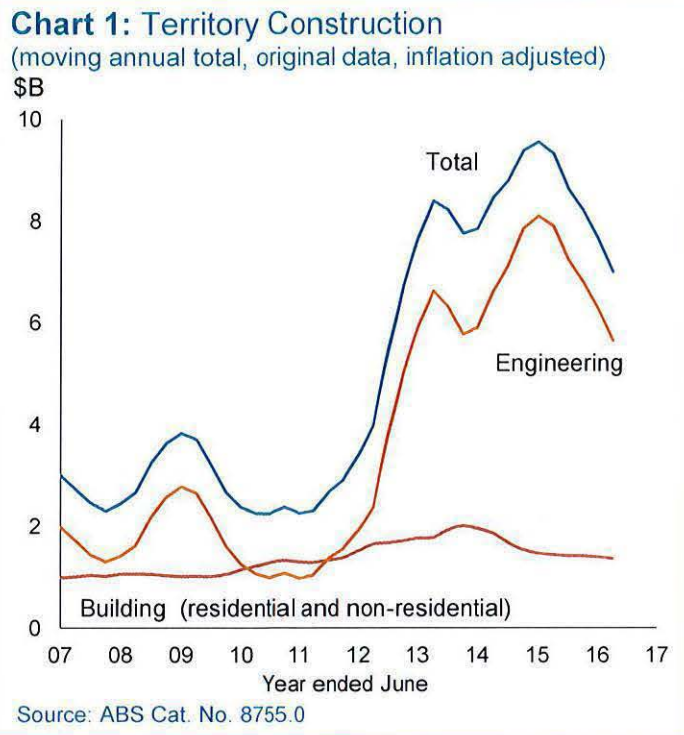
#### Leviable building and construction activity

Levy income will be variable due to peaks and troughs in project commencements and the overall level of construction activity. There are also significant elements of NT construction activity that are not leviable via the normal levy mechanism, including:

- Projects worth less than \$1 million and all detached dwellings are exempt from levy;
- The Inpex project is levied via a different levy mechanism, and so a significant component of the recent peak in engineering construction activity in the NT is not leviable via the normal 0.1% levy.

The chart at right is an extract from an economic brief prepared by NT Treasury, titled “Construction Work Done September Quarter 2016”. Engineering construction is the largest and most volatile component of activity.

Total construction activity was around \$3 billion per annum in current dollars for several years leading up to 2013, although with some significant peaks and troughs. Since then, engineering work has risen sharply, associated most notably with the Inpex project. From the perspective of prospective levy income, that part of the current spike in activity associated with the Inpex project is not relevant, as only the first \$1 billion of value of the Inpex project was leviable via the normal mechanism, and that levy has already been paid.



Future construction activity is difficult to predict. The current very high level of construction activity (much of which is not leviable) is unlikely to persist beyond about 2018 as the Inpex construction is completed. Apart from Inpex, though, leviable activity appears to have been in the \$2-4 billion per annum range over the last decade. An underlying level of NT construction activity of about \$2.5-3.0 billion per annum appears reasonable, with some peaks for larger projects. The pipeline of new large projects at the moment appears to be less than it has been in recent years, meaning a level of non-Inpex activity of about \$2.75 billion per annum is reasonable in the near term. From this deductions need to be made for exempt residential housing (about \$0.3-0.4 billion per annum) and other exemptions (perhaps \$0.2 billion per annum) to arrive at an estimate of leviable activity, and ultimately levy income.

On balance I have assumed that leviable activity (excluding Inpex activity) will be about \$2.2 billion per year in 2016/17. Of course, leviable activity will be quite lumpy, related to timing of project commencements on larger projects, and so in any coming year leviable activity may conceivably range between \$1 billion and about \$4 billion.

### Break-even Levy Rate

Scheme liability (for non-Inpex service) is expected to accrue at a rate of about \$4.2-5.1 million per annum including expenses in coming years. Based on an estimate of leviable activity for coming years of about \$2.2 billion per annum the break-even levy rate is about 0.19-0.23% of leviable activity, depending on the underlying level of service credit reporting and the actual leviable activity. This is higher than the current levy rate of 0.1% of activity, and similar to the range identified in my previous triennial review.

### 3.4 Scheme financial projection

I have prepared a scheme financial projection which shows the projected assets, liabilities, cash flows and surplus in the scheme over the coming decade. In preparing the projection below I have used scheme information as at 30 June 2016 to establish the starting position<sup>1</sup>. I have adopted the valuation assumptions set out in Appendix B of this report in projecting scheme liabilities for 2017 and later balance dates. Projected liabilities are determined using a risk-free discount rate of 2.75% pa (as described in Appendix B). This is the basis for reporting the financial position of the scheme.

I have assumed that the rate of reporting non-Inpex related service credits in coming years will be 800,000 days per annum, consistent with recent reporting patterns for non-Inpex days. Inpex service reports are expected to continue at a high rate in the short term, but to decline as the project winds down. I have assumed that Inpex service credits in 2016/17 will be 1.3 million days, while there will be 0.6 million days in 2017/18, after which service reporting on the project will cease.

I have assumed that leviability activity (excluding the Inpex project) will be \$2.2 billion in 2016/17, indexed with wage inflation for coming years. At the current levy rate of 0.1% this results in levy income of \$2.2 million in 2016/17, broadly consistent with recent years.

The Inpex project has contributed an initial levy payment of \$3 million in respect of the first \$1 billion of project value. The project continues to accrue liabilities, but will pay no further levy until the project is finished. The actual amount of further levy to be paid by Inpex has not yet been determined, but appears likely to be in the range \$10-25M. I have allowed for an amount of \$15 million (within the foreseeable range) to be paid by Inpex during 2018/19 in the projection below, but this figure is speculative and should not be interpreted as advice about the amount of levy Inpex might actually be assessed to pay, or the timing of that payment. It has been included only for illustrative purposes, and I have also illustrated alternatives showing the scheme projected financial position using the two extreme ends of the range, \$10M and \$25M of future Inpex levy income.

The table below shows the base scheme financial projection. All values are in inflated dollars of the projection year.

#### *Financial projection of NT Build scheme 2016-2026 (Base case: \$15M Inpex levy)*

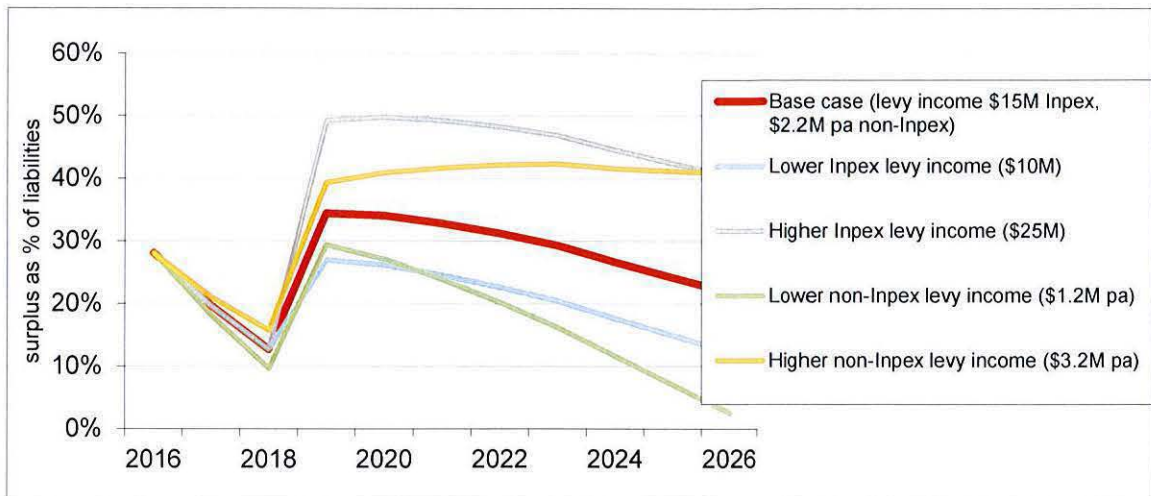
Financial year	Assets e.o.y. \$m	Levy income \$m	Benefit payments \$m	Admin expense \$m	Investment earnings \$m	Accrued liability e.o.y. \$m	Surplus e.o.y. \$m
2016	80.2					62.6	17.6
2017	81.9	2.2	4.2	1.4	5.1	68.4	13.4
2018	80.1	2.3	7.7	1.5	5.1	71.1	9.0
2019	93.2	17.4	8.2	1.5	5.5	69.4	23.9
2020	93.5	2.5	6.5	1.6	5.9	69.7	23.8
2021	94.6	2.6	5.8	1.6	5.9	71.2	23.4
2022	95.8	2.7	5.7	1.7	6.0	73.0	22.8
2023	97.3	2.8	5.6	1.8	6.1	75.3	22.1
2024	99.9	2.9	4.7	1.8	6.2	78.9	21.0
2025	102.1	3.0	5.2	1.9	6.4	82.3	19.9
2026	104.1	3.1	5.7	2.0	6.5	85.5	18.6

<sup>1</sup> The 30 June 2016 liability was determined using a discount rate of 2.0% based on prevailing conditions at the time.

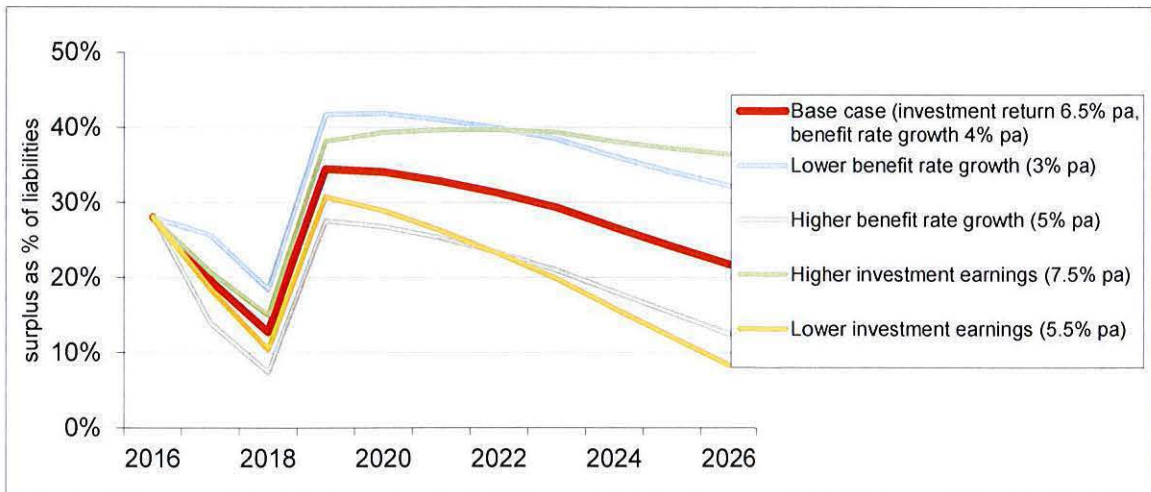


The scheme currently has a small surplus that is expected to decline in the next two years. The decline in surplus is mostly because Inpex liabilities are accruing rapidly, whereas no levy income is being received in respect of the Inpex project. A larger surplus, more in line with historical levels, is likely to be restored at the point Inpex levy is received. There is some chance that the scheme may fall into deficit in the next two years (e.g. in the case of significant investment losses in the next two years or a dramatic drop in the 10-year Commonwealth bond rate used for discounting the scheme liability). However I expect that even if this occurs a surplus will be restored on receipt of Inpex levy.

The scheme financial position is moderately sensitive to the actual amount of levy income received in the longer term. The chart below shows the base case surplus (red line) along with several other scenarios showing the impact of variations in Inpex and non-Inpex levy income over time on the projected scheme surplus.



The projected financial position of the scheme is also sensitive to the assumptions made, including in particular the economic assumptions. The chart below demonstrates the sensitivity of the scheme projected surplus to changes in economic assumptions.



Aside from the short term perturbations associated with Inpex levy, the medium term picture is satisfactory. The above scenarios show that a levy rate of 0.1%, while lower than the current estimate of break-even levy rate, is sufficient to support a scheme surplus for the medium term, even if levy income is lower than expected or if the economic environment diverges from the assumptions that have been made.

### 3.5 Levy rate conclusion

The break-even levy rate is in the range 0.19-0.23% of leviable activity, whereas the actual levy rate is 0.1% of leviable activity. Projected levy income is likely to be lower than scheme accruing costs in coming years. However the scheme surplus and significant investment earnings thereon are expected to allow the scheme to remain solvent for several years without a levy increase.

The choice of a levy rate for the scheme should reflect:

- the current surplus or deficit position. The scheme currently has a moderate surplus;
- the risk appetite of scheme sponsors and their willingness to fund future potential deficits by raising levies in future or other means;
- the desirability or otherwise of change. A stable levy rate and scheme design provide certainty to workers, employers and developers;
- the maturity of the scheme, including demographic and financial elements. The scheme is becoming more mature although there are some aspects of experience that remain poorly known. This creates uncertainty over estimates of the cost of benefits in the medium to long term, and some buffer is required to cope with this uncertainty;
- views about the short and medium term economic environment. In general, a more positive outlook will require a marginally lower levy rate;
- the interstate environment. NT Build scheme costs relative to interstate costs may influence the decisions of developers as to where to place projects.

Based on the current surplus position, the above illustrated projection scenarios and the various considerations set out above I consider it appropriate that the scheme levy rate remain unchanged at the current rate of 0.1% of leviable activity for coming years. A rate of 0.1% of leviable activity is below the break-even levy rate so may not be sustainable in the longer term.

**I recommend** that the NT Build scheme levy rate remain unchanged at 0.1% of leviable activity as a result of this review.

## **Appendix A – Service Reporting Patterns**

Employee service and benefit data are recorded on a central database. Employers submit returns to NT Build half-yearly, advising days of service for all registered employees. I receive data periodically. The most recent dataset used for valuation purposes was received in July 2016. I have also received limited data as at January 2017, which has been used in this review to confirm the overall reasonableness of the July 2016 valuation results.

### July 2016 data

I received data files by email on 1 and 20 July 2016, setting out the current membership database at 30 June 2016. The database was at the time transitioning from one database (NTBuilder, administered by Construction Benefit Services) to another (LeaveTrack, administered by Formation Technology Group), and I received both databases at the same time, to allow a comparison to be made. There were some issues identified in the transition, where balances are different between the two databases, but these were minor. I assumed the LeaveTrack database was correct in each case. The LeaveTrack database, while likely to be slightly more accurate, didn't include some important details such as the interstate indicator and the break-up between Inpex, Interstate and other accrued and taken days in the service records, and so I used aspects of both databases in reaching final 30 June 2016 valuation results for financial reporting.

The data included details of all current or previously registered workers in the database, including worker and employer number, date of birth, service dates and service credits. Service credits were divided into the 6-monthly periods to which they relate, including up to 30 June 2016.

Most employer returns were still outstanding for the six months to 30 June 2016 when the data was prepared. I estimated the service credits for the January-June 2016 period.

The service credits in the data include interstate days which have been transferred into the scheme. I understand that benefits in respect of the interstate days will be funded by the interstate scheme at the point of benefit payment, and so there is no liability within NT Build for these days. These days are excluded from the valuation.

### January 2017 data

I received data files by email on 24 January, setting out the individual member service database as at that time. Employer returns for the July-December 2016 period are not yet due, and so the data received is in effect an update to the 30 June 2016 service snapshot used in the financial reporting valuation as at 30 June 2016. The service reports up to 30 June 2016 are expected to be nearly complete now, with only a small element of late reporting likely to increase aggregate pre-2016 service credit balances marginally.

### Reported service to 30 June 2016

Service credits are reported by half-year. There is a notable element of delay in reporting of service credits, where some service credits are not immediately reported. This delay is demonstrated in the table below. Note that the table below is based on the NTBuilder database, except for the most recent dataset which comes from the LeaveTrack database. The

table below does not include pre-2005 NT service reports. There are 0.04M days of reported pre-2005 NT service not included in the table below, for which the scheme has liability.

*Table A1: History of service reporting in NT Build*

6 months ended	Time of receipt of data extract						Workers with days reported	Average days in period
	Aug 2012	Aug 2013	Dec 2014	Sep 2015	July 2016	Jan 2017		
Jun 05	410,577	411,117	410,926	413,724	408,716	405,730	3,741	108
Dec 05	445,106	445,540	445,448	445,000	440,195	440,866	5,007	88
Jun 06	305,074	305,965	305,422	307,132	312,198	311,948	4,105	76
Dec 06	389,343	390,016	390,748	391,785	385,065	385,100	4,322	89
Jun 07	304,112	304,598	304,761	305,638	311,696	312,231	4,161	75
Dec 07	345,483	346,196	347,445	348,580	344,422	345,037	3,781	91
Jun 08	260,487	261,133	262,356	263,511	269,599	269,587	3,703	73
Dec 08	366,595	367,242	369,706	371,995	369,699	370,662	3,923	94
Jun 09	246,447	247,793	249,921	251,399	256,164	256,808	3,442	75
Dec 09	305,255	307,184	310,479	311,978	310,928	312,046	3,334	94
Jun 10	229,462	231,800	235,218	236,520	240,606	241,497	3,209	75
Dec 10	322,390	327,371	335,044	337,015	335,671	336,984	3,627	93
Jun 11	251,862	259,435	263,653	265,194	269,589	270,492	3,739	72
Dec 11	326,372	351,056	359,529	361,953	362,569	364,155	4,109	89
Jun 12	176,397	304,601	317,583	314,921	319,809	321,045	4,783	67
Dec 12		473,706	524,500	519,374	520,746	522,446	5,982	87
Jun 13		320,173	508,280	513,114	516,929	517,631	7,216	72
Dec 13			696,794	710,930	715,778	717,398	8,280	87
Jun 14			583,483	618,766	627,895	629,127	8,842	71
Dec 14				932,966	966,313	968,879	10,557	92
Jun 15				652,173	766,960	770,346	10,875	71
Dec 15					1,122,956	1,159,801	12,240	95
Jun 16					2,557	962,470	13,088	74
Total						11,192,286		

The delay receiving complete data for each period is evident in the above table by reading across each line. For example, for the June 2013 reporting period, the initial record of service days in the data extract supplied to me in August 2013 was 0.320M days, but this has gradually increased as additional employer returns for the period have been received to 0.518M days in the most recent data. This type of delay in reporting of service credits appears to be associated with late lodgement of employer returns, both for existing employers and new entrants to the scheme. It is an enduring feature of scheme experience, and so is allowed for in scheme projections and valuations of liabilities.

In order to allow for late service reports in the July 2016 database I examined trends and estimated that the ultimate service credits to be reported up to June 2016 would be 11.278 million days. The January 2017 data includes 11.235 million days for periods up to 30 June 2016. I expect there will be minor future reporting in respect of pre-2016 periods, probably less than 0.1 million additional days. Thus the estimate of reported service days developed based on July 2016 data of 11.278 million service days remains materially accurate and can continue to be used unadjusted. Of these service credits, 0.984M days had been paid out prior to 30 June 2016. This gives an estimated balance of untaken accrued NT service days of 10.294 million days.



## **Appendix B – Assumptions used to estimate accrued liability and accruing cost of LSL benefits provided by NT Build**

This appendix sets out and reviews the assumptions and methods used to calculate the scheme liability as at 30 June 2016. Some minor changes to assumptions are set out, and the revised assumptions are used in determining accruing costs and projecting scheme liabilities.

### Valuation method

An individual member projection has been used. For each future year the amounts of entitlement expected to be paid in service and on termination of membership have been determined by making a projection based on assumed rates of claiming benefits in service, rates of death, retirement, and resignation, and rate of salary escalation. The resulting cash flows have then been converted to a present value by discounting from the expected date of payment to the valuation date at the assumed interest rate.

The total LSL liability needs to be apportioned between the part which has accrued and the part that is expected to accrue in future. To value accrued liabilities I have assumed that balances accrued at the valuation date will be taken prior to future accruing balances, and have counted only those payments in the accrued liability in the projection. This is a standard apportionment method.

The valuation approach treats active members (those with service credits in the last twelve months) and inactive members (other members) differently. Active members are assumed to either continue accruing service at their current rate or exit at some stage in the future in line with the demographic assumptions. Inactive members are assumed to either remain inactive, only claiming a benefit if they have a vested entitlement, or to re-enter service and become an active member again. Only a small proportion of inactive members are assumed to re-enter service.

### Valuation assumptions

#### *Economic assumptions*

The benefit rate is linked to construction industry average weekly ordinary time earnings. It has increased through scheme history at 4.7% pa, although lower increases have occurred in recent years. I have assumed a long term future benefit growth rate of 4.0% per annum, consistent with NT Treasury's expectations for long term future salary growth in the Territory. The benefit rate increase for 2016/17 occurred on 1 July, and no further increase for 2016/17 is allowed for in this valuation.

The discount rate for financial reporting is determined based on prevailing long term Commonwealth bond rates, consistent with the requirements of AASB137. The ten year bond yield at 30 June was 1.98% pa, or 2.0% pa after converting from semi-annual to annual and rounding to the nearest 0.25%. I used a discount rate of 2.0% pa for determining the 30 June 2016 position. The current ten year bond yield is 2.78% pa, or 2.75% pa after converting from semi-annual to annual and rounding. I have used this discount rate as the base case for determining accruing costs and liability balances after 30 June 2016.

The risk-free discount rate is lower than the benefit inflation rate. This is an unusual circumstance which has arisen due to low prevailing yields on Government bonds. The approach of relying on the 10-year government bond yield to indicate the discount rate is a reasonable and acceptable approach for financial reporting under AASB137. Different approaches may produce higher or lower results, depending on the approach. I am satisfied that the approach adopted is reasonable for financial reporting purposes.

When considering funding and projected scheme financial positions, it is useful to also consider a discount rate based on the assumed return on assets. I have assumed, based on the current asset allocation of NT Build investments, long term historical relationships between inflation and investment returns and recent and longer term investment return experience that NT Build will earn 6.5% pa on investments in the long term. I have used this rate of 6.5% pa as the asset-based discount rate. This rate has only been used in determining the break-even levy rate, in Section 3.3 of the report.

#### *Exit rates*

There is not enough experience, particularly at longer membership durations, to develop exit rate assumptions based solely on scheme experience, so I have adopted rates based on experience in NT Build, similar schemes and more general population measures.

I have assumed that withdrawals from the industry for active members will occur at high rates for short serving workers, dropping to low rates with longer service. The adopted rates are based on both scheme and industry experience. In addition to service-related withdrawal rates I have also included age-related retirement rates based on general workforce retirement rates. I have assumed low rates of retirement from 55 to 59, but then higher rates from age 60 to 79, with all workers assumed to exit at age 80. For inactive members I have assumed high withdrawal rates of 20% per annum reflecting the deregistration rules.

#### *Exit rates, on retirement and other withdrawal*

Age	Retirement rate pa	Years since entry	Withdrawal rate pa
55-59	5%	0	30%
60	20%	1	20%
61-63	10%	2-5	10%
64	20%	6-10	8%
65-79	25%	11-15	7.5%
80+	100%	16-20	5%
		21+	4%

Deaths are a minor form of exit, but have slightly different benefits to other exits so have been modelled separately. I have assumed that deaths will occur at the rate of 50% of Australian Life Tables 2011-13 Males. Low death rates reflect the general fitness of construction workers, and also an expectation that those with deteriorating health will claim an exit benefit (and so be included in other decrements above) prior to death.

*Timing of benefit payment*

Experience from interstate schemes strongly suggests that in many cases vested withdrawal and retirement benefits are not claimed for some time. (However, benefits claimed in service are likely to be paid immediately when claimed). To produce a realistic projection of claim payments I have assumed that withdrawals and retirements will be paid over time as follows:

*Delay between eligibility and benefit payment on exit from the scheme*

Delay in years from eligibility to claim	Proportion of benefit claimed
0	40%
1	30%
4	30%

It is possible that a fraction of vested service credits will never be paid out due to lost members. Discussion with NT Build about current and future actions to locate lost members indicates that lost benefits are not likely to be a significant feature of scheme experience. I have made no allowance for lost benefits in this review.

*Eligibility to claim benefits*

Workers with interstate service may claim benefits on exit with fewer service credits than the stated scheme service thresholds. I have made different assumptions about eligibility to claim benefits on exit depending on the period of service and the interstate indicator flag in the data. I do not have a perfect indicator of whether workers have interstate service, but I have received data showing evidence of interstate links. Approximately 49% of all workers have some indication in their record of interstate service. The proportion of workers eligible to claim on withdrawal or retirement is assumed to vary with service, as per below.

*Proportion of workers assumed to be eligible to claim benefits on exit from the scheme*

Service days	with interstate service indicator	without interstate service indicator
0	5%	1%
220	10%	1%
440	20%	2%
660	40%	2%
880	75%	10%
1100	100%	100%
1320	100%	100%
1540+	100%	100%

The above table takes into account the fact that, even though there is a 1,540 day threshold for benefit eligibility on withdrawal before retirement, the effective threshold for vesting at all ages is 1,100 days due to the threshold of 1,100 days for payment on deregistration from the scheme.

*Rate of taking leave in service*

I have assumed that leave will be taken in service at rates consistent with scheme experience, where available. Because of the impact of interstate service credits it is apparent that some members are able to claim in-service benefits prior to reaching the 2,200-day threshold. I have allowed for this feature in the valuation, and have different rates of taking leave for those with an indication of interstate service in their membership record.

*Assumed number of service days claimed from the scheme*

Total credited days	Number of days assumed claimed in service in year	
	without interstate service indicator	with interstate service indicator
0	0	0
220	0	4
440	0	21
660	0	21
880	0	21
1100	0	21
1320	8	85
1540	8	169
1760	8	169
1980	8	169
2200	846	508
2420+	169	169

*Re-entry after service break*

Many workers have breaks in service. I have analysed scheme experience to identify re-entrants after a period of inactivity. I examined a range of cohorts to identify the rates of re-entry after a one-year break. Around 12-18% of all those who have ever had a one-year service break have subsequently recommenced service, sometimes more than once, and scheme experience to date indicates that workers continue to re-enter the scheme at long durations of up to 10 years without activity. The rate of re-entry will tend to climb over time for each cohort of workers, and so the ultimate rate of re-entry will be higher than that observed in the data. An ultimate rate of reactivation in the range 20-40% appears plausible based on scheme data. On balance I have assumed that 30% of all inactive workers will reactivate at some point in future.

I note that the re-entry rate is an important determinant of eventual liability for those not currently active in NT and there is moderate uncertainty in this particular assumption. Also, Inpex workers may have different experience to other scheme members, and this feature may be an important factor in the determination of Inpex liability and levy.

*Scheme expenses*

Scheme administration expenses are about \$1.3-1.4M pa currently, and have been around this level for several years. A higher volume of benefit payments in coming years may see a slightly higher staff requirement, perhaps to \$1.5M pa in current terms. Part of this expense is incurred at the point service is initially recorded, some is incurred in maintaining records during membership, and a significant part is incurred at the point of benefit payment. For past service credits, I have assumed that 35% of expense has already been paid, while 65% remains outstanding. By assuming a steady state and turnover of service credits evenly over a ten year period I have estimated an accrued expense liability of about \$6M in current terms. This is about 12% of the accrued liability on the current valuation basis. Thus I have allowed for a liability for future expenses of 12% of the accrued leave liability going forward. This is reduced from the allowance of 16% in the 30 June 2016 and other recent valuations.

*Late-reported service credits*

As discussed in Appendix A there is an enduring feature of delay in service reporting in the scheme. I estimate that there are less than 0.1 million days of service that will be reported in future in respect of pre-30 June 2016 reporting periods. These service credits have been allowed for in the accrued liability by scaling the accrued service credits for workers in line with the assumed additional credits.