

# Your Future Your Super Performance Test

## Exploring the Impact on Super Fund Investment Strategies

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# 1. Introduction

We research how the Your Future, Your Super (YFYS) performance test may potentially constrain the way super funds design their investment strategies. If Trustees prioritised passing the YFYS performance test, many super funds would need to significantly alter their investment strategy. The results of this research highlight the conflict Trustees' will face between managing for best member outcomes and prioritising the YFYS performance test.

We find the concept of banked performance has a short-lived benefit given the rolling application of the YFYS performance test whereby a new performance series is created each year. Therefore, this research has relevance to all super funds who will be subject to the YFYS performance test.

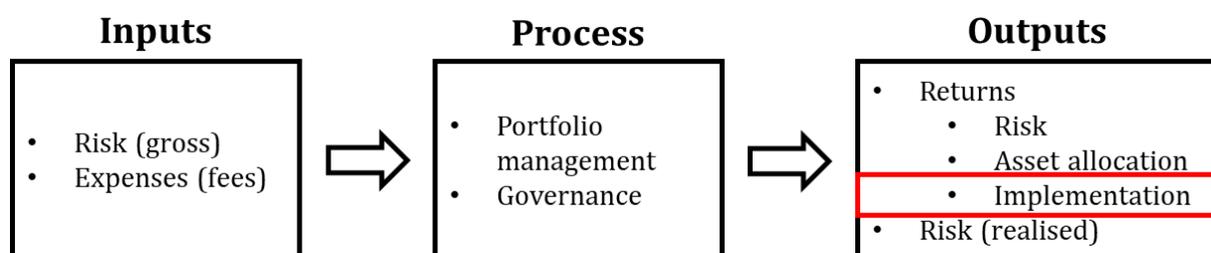
We believe that Trustees of super funds face a difficult situation. In our view the YFYS performance test does not align well with managing portfolios in the best interests of members. We think many Trustees will discover that portfolios designed to pass the performance test may have lower expected returns, be less effectively diversified, and bear more risks than portfolios constructed in the absence of the performance test.

Models supporting this research are open source ([here](#)) to enable industry and policymakers to better understand and explore different assumptions.

# 2. Previous Research

In response to the release of the YFYS reforms announced in the Budget, a working group was formed to analyse and assess the YFYS performance test. Papers and supporting statistical models are available [here](#).

The Working Group agrees with the intent of the test but has a range of concerns which emanate from the design of the test. The test assesses only one component of performance and ignores diversification benefits, as illustrated in Diagram 1. The Working Group considers the test a crude measure of implementation alpha ('crude' because of the limited number of public market benchmarks used).



**Diagram 1:** Process representation of investment management. The red box reflects the focus of the YFYS performance test.

Working Group research casts doubt on the statistical effectiveness of the YFYS performance test. Further, the Working Group detailed multiple undesirable outcomes in relation to distortion of portfolio management processes, consumer outcomes, and industry structure.

## 3. Further Research on Portfolio Constraints

### 3.1. Motivations and Research Question

Since the release of the YFYS performance test, concerns have been raised about how the test will constrain the ability of super funds to manage portfolios in the best interests of members. Such concerns have generally been raised without supporting evidence. Given its importance, the Working Group decided to explore this issue in detail. We address the following research question:

*To what degree (if any) will the YFYS performance test constrain the investment strategies of super funds?*

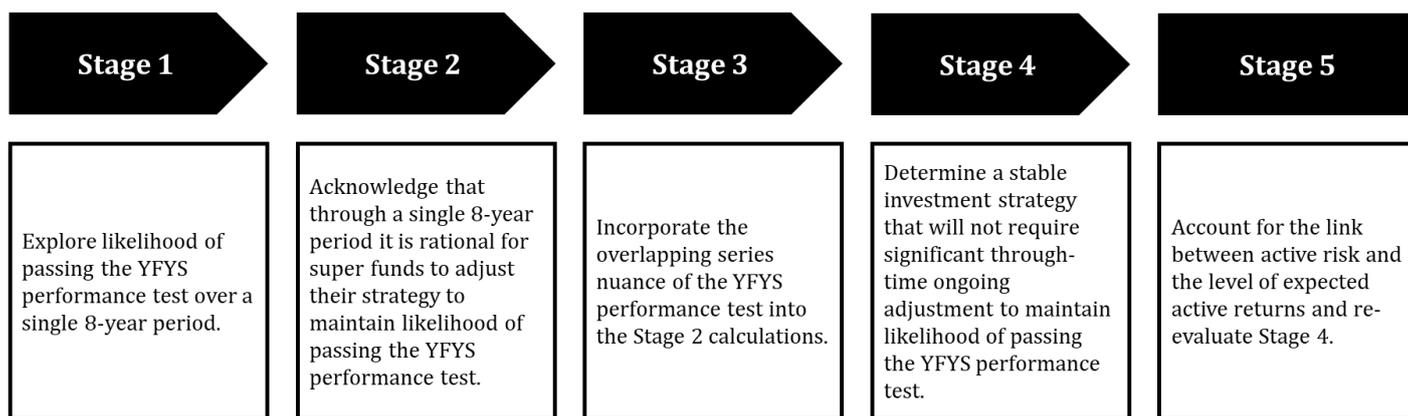
Our research is theoretical – we cannot predict with certainty the behaviours of agents (super funds), especially over the short-term. Nonetheless, we believe the insights are valuable as they aid the identification of challenges faced by super funds, notably the conflict between the desired investment strategy (which focuses on best member outcomes) and a strategy which focuses on the YFYS performance test.

Trustees will wish to avoid failing the performance test – this is hardly a unique insight. This concern will influence the board, executive and different fund functions, from investment management through to marketing and communications. Whilst initially Trustees’ decisions are likely to be reactive and be based on their current performance against the test, over the long-term, we anticipate funds will look to set strategies that will account for the likelihood of failing the performance test. In our view, determining a stable investment strategy, which accounts for any conflict between managing for member best outcomes and the YFYS performance test will be an important strategic decision for every super fund. Our research will assist super funds as they navigate this challenge.

Recently the term “banked performance” has emerged in industry and media. Some super funds which have strong past performance (performance in the “bank”) believe they will have the ability to maintain the strategy that they consider is in the best interests of their members without being constrained by the YFYS performance test. This is further motivation for our research.

### 3.2. Overview of our Modelling

A substantial amount of detailed modelling was required to address our research question. Breaking the modelling into stages makes it easier to understand the research undertaken and provides valuable insights. Diagram 2 provides an overview of our modelling.



**Diagram 2:** Overview of the analysis undertaken to address the research question.

In this research we use the term “tracking error” as an overarching proxy for “investment strategy”. Tracking error, defined formally below, represents the degree of portfolio flexibility available to a super fund. A tracking error constraint could be populated with an infinite number of strategies relating to areas such as allocations (different sectors and unlisted assets), degree of active management, and risk management activities (including ESG). We do not consider how best to allocate tracking error, but we provide some examples to illustrate the degree of constraint.

Tracking error measures the volatility of relative performance over time. Tracking error can be measured ex-post or estimated ex-ante. When we use the term tracking error in this Paper, we actually mean tracking calculated under the YFYS performance test. This accounts for the limited number of public market benchmarks used in the YFYS performance test.

We draw attention to Stage 4 in Diagram 2, where we incorporate aspects of a stable investment strategy. We consider it important to reflect practices and preferences (in this case the undesirability of potentially having to make frequent and large changes to investment strategy through time) which are realistic.

### 3.3. Prelude: The Conflict with Members’ Best Interests

The results of this analysis draw attention to the conflict that Trustees of super funds face in designing their investment strategy. Put simply: if super funds want to prioritise maintaining a high likelihood of passing the YFYS performance test and implementing a stable investment strategy, then many funds will find they cannot continue with their current investment strategy.

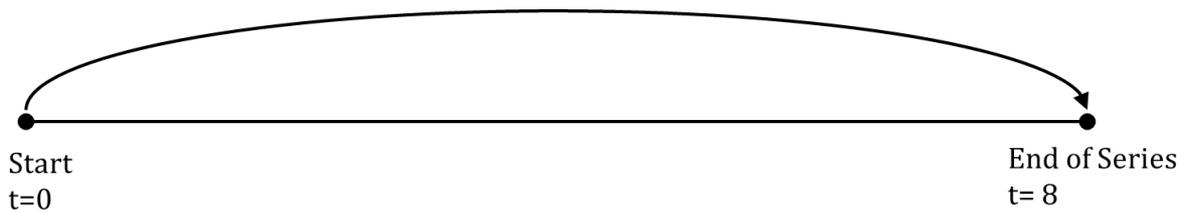
The degree to which funds can allocate to a broad range of investment sectors and implement risk management activities (including management of ESG risks) will be compromised. Given these activities were undertaken on a members’ best outcomes basis, we can see the conflict that Trustees will face in a YFYS performance test environment.

This is explored in further detail in 3.9 and 3.10.

### 3.4. Stage 1: Full-Period Considerations

We begin by exploring what may appear the obvious way to address the challenge of determining an appropriate investment strategy. We desire an investment strategy which delivers a targeted

likelihood of passing the YFYS performance test over the full 8-year period. This framing is reflected in Diagram 3. We label this result the “full period fixed tracking error”.



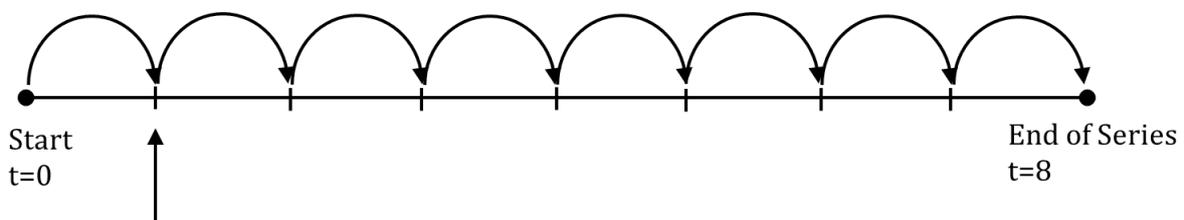
**Diagram 3:** Problem framing: “What level of full period fixed tracking error produces a desired likelihood of passing the YFYS performance test over the full 8-year period?”

We illustrate this problem through a case study:

- A fund has an expectation of outperforming its YFYS tailored benchmark by 50bp pa.
- It wants to be 90% sure of passing the test over a rolling 8-year period, starting from now (t=0).
- Calculations reveal that the permissible full period tracking error for the fund is 2.2% annualised.

### 3.5. Stage 2: Through-Time Performance Management

The previous section considers a stagnant strategy in which a fund sets its strategy once (at the outset) and then holds it throughout the life of the series. However, such an approach fails to actively take steps to maintain the likelihood of passing the performance test as performance is realised through time. If a fund experiences good (poor) performance, it has a greater (reduced) likelihood of passing the performance test if the investment strategy is left unchanged. In our modelling we consider it rational for a Trustee to want to maintain a likelihood of passing the performance test. This means that a fund which has experienced poor performance may need to reduce its tracking error target to restore the likelihood of passing the performance test to the desired level. A framing of the through-time performance management process is represented in Diagram 4.



End of Year 1 (and each subsequent year):

- Account for performance
- Reassess likelihood of passing test over remaining period
- Adjust tracking error to restore desired likelihood of passing performance test

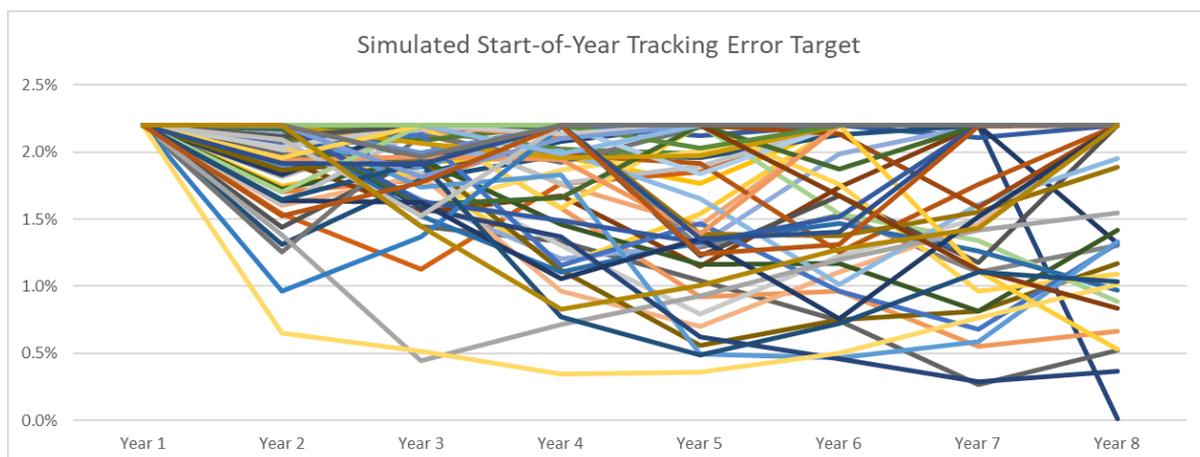
**Diagram 4:** Through-time performance management process.

We illustrate the through-time performance management process by continuing with the case study discussed previously (50bp pa expected outperformance, 90% desired likelihood of passing the test, resulting in a 2.2% annualised full period tracking error target):

- Consider a fund which underperforms its tailored benchmark by 1% in the first year.
- If the strategy is maintained, there is now a 13% likelihood of failing the performance test over the remaining 7 years of the full 8-year period.
- To maintain a 90% likelihood of passing the performance test over the full 8-year period the Trustee would have to reduce their tracking error target from 2.2% to 1.9% annualised.
- As explored further in Stage 4 this may not be how funds will behave (e.g. there may be hesitancy to incur transaction costs) but it proves informative when determining a longer-term stable investment strategy.

The reassessment process detailed in Diagram 4 would continue through time. This illustrates the concept of banked performance: in this setting funds which have performed well in the past will not have to alter their investment strategy to maintain the desired likelihood of passing the performance test.

Diagram 5 presents simulations of the ongoing management process to illustrate the variability in the investment strategy over an 8-year cycle (we use 2.2% annualised tracking error as the ceiling because we know in practice that a new 8-year performance series begins each year).



**Diagram 5:** Simulated through-time tracking error management for a fund with an outperformance expectation of 0.5% pa targeting to maintain a 90% likelihood of passing the performance test through a single 8-year period (100 simulations). Initial and maximum annualised tracking error set at 2.2%.

Diagram 5 suggests that, for this case study, a Trustee who implemented the outlined investment strategy should reasonably expect to have to adjust their investment strategy through time. In fact, our analysis found that, for this example, there is a 61% likelihood that a Trustee would need to modify their investment strategy at some point over the 8-year performance cycle to maintain 90% confidence of passing the performance test.

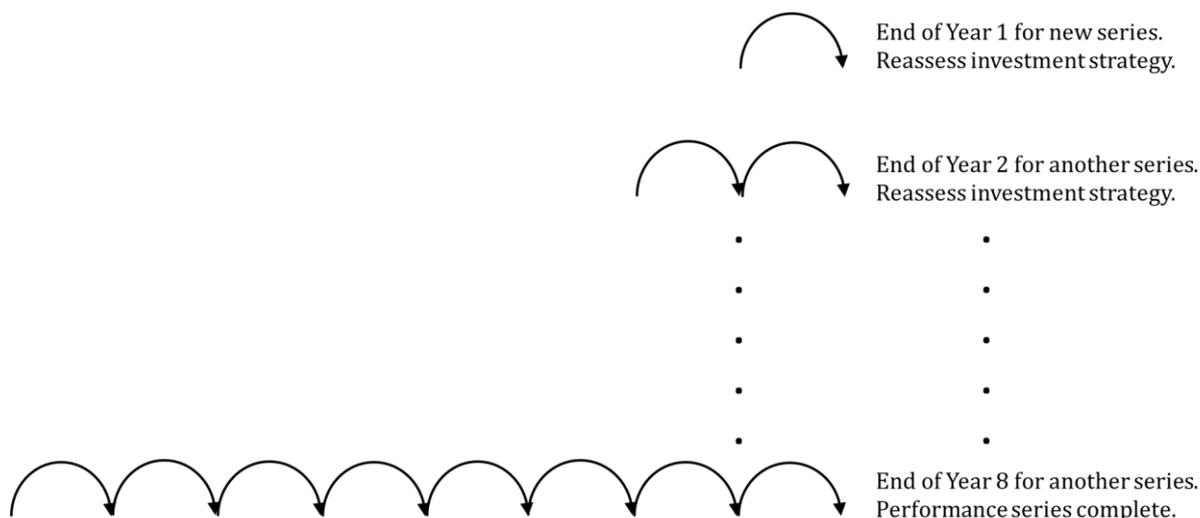
There is also a different scenario where a fund finds itself well behind the performance test. Our previous research (see Section 3.1.3 of the [Detailed Paper](#)) highlights the rational incentive for a fund to increase tracking error, effectively “swinging for home runs”. We reiterate this as a risk

to consumer outcomes created by the YFYS performance test design but don't explore it any further in this Paper.

### 3.6. Stage 3: A New Rolling Series Every Year

We make two additional observations which are important but further complicate the modelling (captured in Diagram 6):

1. Each new year represents the beginning of a new 8-year performance series.
2. Each year of performance influences eight different performance series.

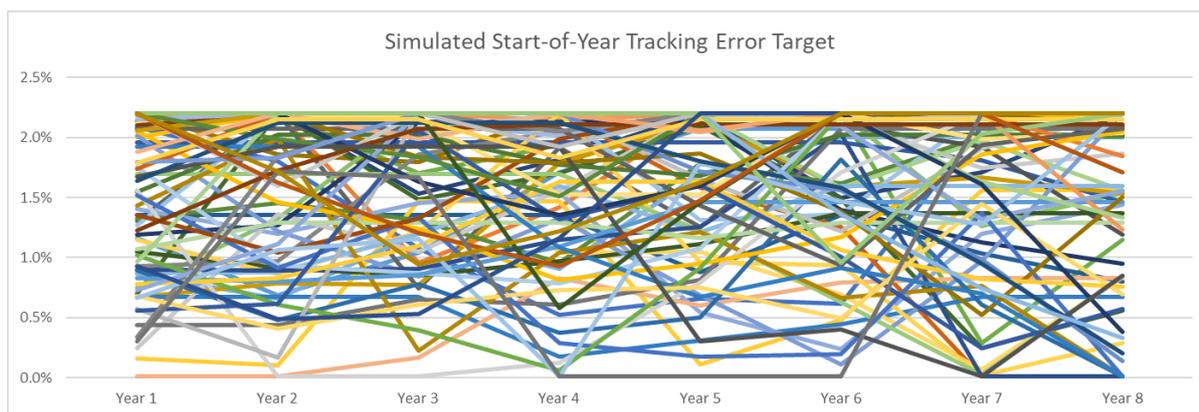


**Diagram 6:** Overview of overlapping series and the performance test reassessment process.

We extend our previous example, but for simplicity consider only two series (not all eight):

- A fund underperforms its performance benchmark by 1% in a given year ('base year').
- For the 'new' series (where this represents the first year of performance):
  - If the strategy is maintained, there is now a 13% likelihood of failing the performance test over the remaining 7 years of the full 8-year period.
  - To maintain a 90% likelihood of passing the performance test over the full 8-year period the Trustee would have to reduce their tracking error target from 2.2% to 1.9% annualised.
  - (These results are as per the previous section).
- We further assume that the fund underperformed by 0.5% in the year prior to the base year.
  - This fund also has a 15% likelihood of failing the performance test over the full 8-year period for the series which began 2-years before the base year.
  - To maintain a 90% likelihood of passing the performance test over the 8-year period which ends in six years the Trustee would have to reduce tracking error from 2.2% to 1.8% annualised.
- The Trustee would need to select the lower tracking error target (1.8% ann.) to maintain at least 90% probability across all rolling series.

Diagram 7 illustrates a simulation of this case study, accounting for multiple rolling series and a process which has been seasoned (i.e. running under this likelihood management process for a reasonable period).



**Diagram 7:** Simulated through-time tracking error management for a fund with an outperformance expectation of 0.5% pa targeting to maintain a 90% likelihood of passing the performance test through rolling 8-year periods (100 simulations). Initial and maximum annualised tracking error set at 2.2%.

When we account for the rolling nature of the performance test, we find there is a much higher likelihood that a Trustee will have to adjust their investment strategy through time. In our analysis, we found that for this example, a Trustee is 89% likely to have to modify their investment strategy at some point during the 8-year cycle.

The rolling nature of the YFYS performance test and, specifically, the creation of a new performance series each year, means that the benefits of banked performance are short-lived.

### 3.7. Stage 4: A Stable Investment Strategy

Consider what it means to modify an investment strategy:

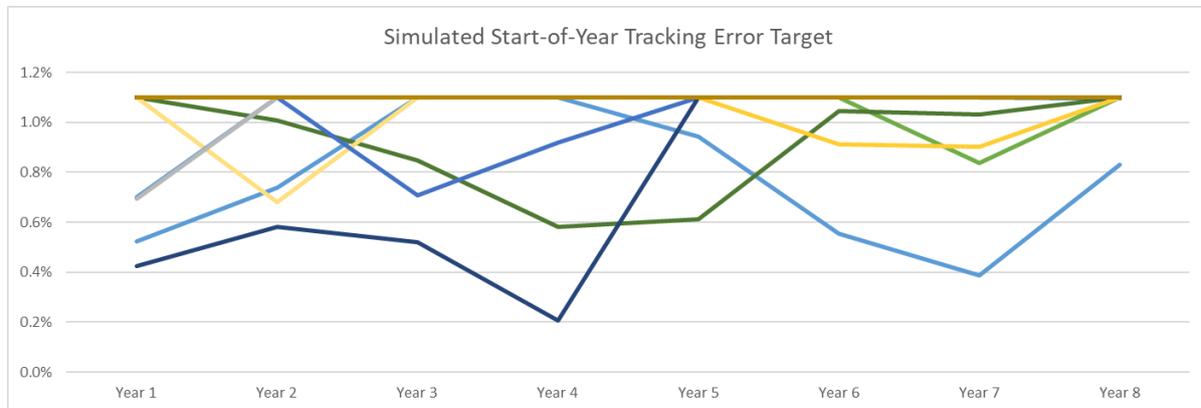
- It will certainly mean transaction costs which negatively impact performance.
- It may mean reducing exposure to illiquid assets which are difficult to sell. Large transaction impacts may be incurred. These assets carry outsized tracking error due to the public market benchmarks used in the YFYS performance test.
- It may mean not being able to manage risks to member outcomes to the degree which the Trustee would like. In previous research we detailed how managing risks to member outcomes may increase performance test tracking error. Notable examples include managing ESG risk, portfolio overlays and diversification strategies.
- Funds may potentially be ‘squeezed’ out of positions at a time when they are undervalued.

We expect that given the findings above, Trustees will be motivated to search for a stable investment strategy. We consider this to be a strategy which, with high likelihood, will not require adjustment through time. We continue our previous example (50bp pa expected outperformance, 90% maintained likelihood of passing the performance test) but explore the level of tracking error which makes it 90% likely that the strategy will not have to be modified through an 8-year cycle. We account for multiple series in this analysis.

We find this level of stable tracking error to be 1.1% annualised (in the previous example, recall that the full period fixed tracking error was 2.2% annualised). The simulation in Diagram 8 below illustrates, in comparison to Diagram 7, a significantly lower level of strategy updating.

This lower level of “stable tracking error” may be beneath where many funds thought they would be able to operate.

Appendix 1 details allowable levels of full period certain tracking error and stable tracking error for different combinations of expected returns and likelihood.



**Diagram 8:** Simulated through-time tracking error management for a fund with an outperformance expectation of 0.5% pa targeting to maintain a 90% likelihood of passing the performance test through rolling 8-year periods and a 90% likelihood that the strategy will not have to be modified through an 8-year cycle (100 simulations). Initial and maximum annualised tracking error set at 1.1%.

### 3.8. Stage 5: Linking Expected Returns with Tracking Error

The previous two examples assume that outperformance expectations are fixed. But in practice, return expectations are generally linked to the amount of risk taken and, similarly, active return expectations are generally linked to the amount of tracking error. The information ratio links expected active returns to tracking error as follows:

$$\text{Expected (active returns)} = \text{expected (information ratio)} \times \text{targeted (tracking error)}.$$

A key assumption is what information ratio we can expect a fund to generate in attempting to outperform the YFYS benchmark. We update our analysis to consider the level of stable tracking error using information ratios. We explore the case of an information ratio of 0.2. Any assumption will be subjective and controversial, as discussed in Table 1. However, we consider our assumption to be conservative.

<b>Too Conservative</b>	<b>Too Aggressive</b>
<ul style="list-style-type: none"> <li>• There are some situations where outperformance results directly from the YFYS benchmarking process. For example, under the YFYS performance test, a reasonable expected information ratio for high yield credit would be 0.33.</li> <li>• Some ability to package market performance as alpha, means it is not just an alpha debate.</li> <li>• Some potential for traditional active returns for institutional investors who pay lower fees (topic of strong debate).</li> <li>• Multiple active return activities generate diversification and improve the information ratio.</li> <li>• Some evidence of super funds outperforming the test by larger amounts.</li> <li>• Over time there is an argument that funds with poor implementation performance will exit the industry, which should raise future performance expectations. This is the policy intention.</li> </ul>	<ul style="list-style-type: none"> <li>• Not all tracking error is used to generate active returns (e.g. it could be used for the purpose of portfolio diversification), so the information ratio assumption should be diluted.</li> <li>• Strong academic debate that alpha is a zero-sum game.</li> <li>• Some evidence of funds underperforming by large amounts.</li> </ul>

**Table 1:** Both sides of the debate on information ratio assumptions.

In our example we seek to determine the stable level of tracking error, assuming a 0.2 information ratio, while maintaining through time at least a 90% likelihood of not failing the performance test, while also wanting to be 90% likely of not having to change the level of tracking error over any 8-year period. We find:

- Full period fixed tracking error: 2% annualised
- Stable tracking error: 0.7% annualised

Partly, the level of stable tracking error is lower than in the previous example because as we search for a stable (lower) level of tracking error our expected outperformance also falls, which exacerbates the need for a lower tracking error strategy to avoid failing the performance test.

Appendix 2 details allowable levels of full period fixed tracking error and stable tracking error for different combinations of information ratio and likelihood (where likelihood addresses both the likelihood of passing the test at any point in time, and the likelihood of not having to alter the investment strategy over an 8-year period). We find that for many examples the stable tracking error is less than 1% annualised.

### 3.9. How Constraining is 1% Annualised Tracking Error?

It is important to consider whether 1% annualised tracking error constrains the design of investment strategies. We find the degree of constraint to be strict.

In the [Detailed Paper](#) we presented the following example:

- We calculate a portfolio with 10% exposure to high yield credit, 10% to unlisted property and 10% to unlisted infrastructure to have an historic tracking error of 3.6% annualised.

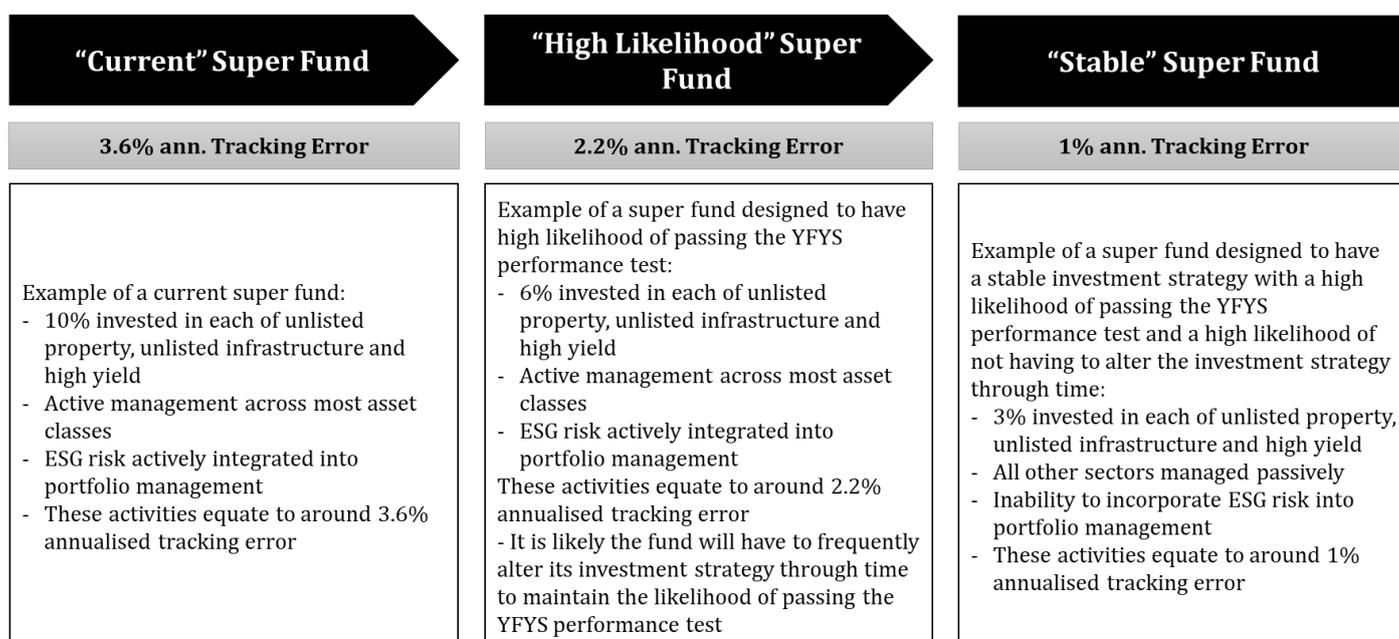
To meet a 1% annualised tracking error budget using the same calculations, the fund would be constrained to have:

- Less than 10% aggregate exposure to high yield credit, unlisted property, and unlisted infrastructure. This assumes all other exposures are passive exposures matching YFYS benchmark indices. Under this scenario active risk management strategies (such as ESG) could not be applied within the tracking error constraint.

If industry were to adopt 1% annualised tracking error portfolios (based on the YFYS performance test) there would be many ramifications, including:

- Significant net flows out of illiquid assets and no buying interest in illiquid assets for the foreseeable future.
- Significant transaction fees.
- Loss of diversification and non-implementation of expected value-adding opportunities.
- Inability to fully manage portfolio risks such as ESG risks.
- Portfolios may be less effectively diversified.

Because there exists an infinite number of investment strategies it is difficult to demonstrate the impact of the tracking error constraints implicit in the YFYS performance test. In Diagram 9 we take what we consider a common portfolio structure of a profit-for-member fund and illustrate the challenges it would face in implementing a stable strategy which accounts for the YFYS performance test.



**Diagram 9:** Progression of a sample super fund. Note that “High Likelihood” corresponds with Stage 1 in Diagram 2 and “Stable” corresponds with Stage 5.

### 3.10. The Conflict with Member’s Best Interests

Fund’s which wish to explicitly manage the risk of failing the YFYS performance test may find themselves at conflict with their duty to manage in members’ best interests.

Our examples focused on passing the YFYS performance test. For many funds, Trustees may believe that making the findings of these examples practice may be to the detriment of member outcomes. A range of issues have been raised which apply directly to members’ best interests, including:

- Reduced returns to members
- Portfolios which are less effectively diversified
- The inability to actively manage specific risks to member outcomes including ESG risks

A Trustee may choose to not allow the YFYS performance test to constrain the design of their investment strategy and focus solely on best member outcomes. The possible (in some case studies, expected) outcomes are an increased likelihood of failing the performance test at some point and/or the need to significantly change the investment strategy in response to weak short-term relative performance against the YFYS performance test. In Diagram 10 we compare performance test likelihood and stability statistics between the “Current” and “Stable” strategies detailed in Diagram 9.

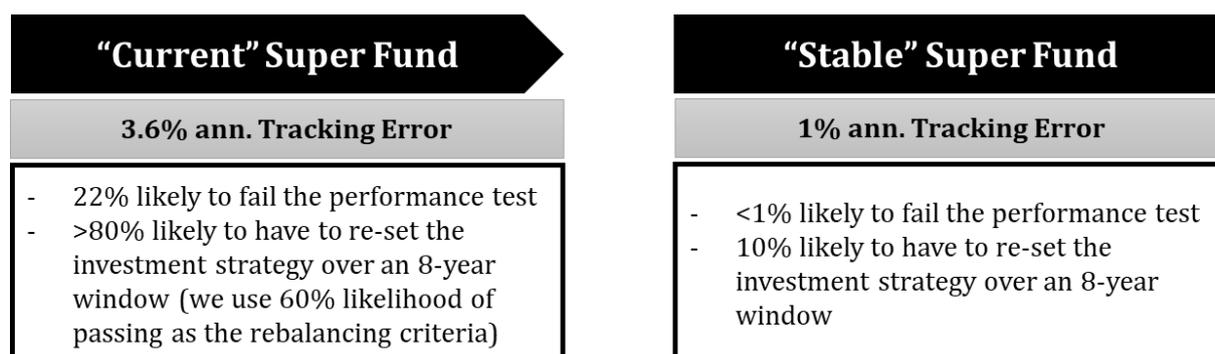


Diagram 10: Performance test likelihood and stability statistics.

The models in our analysis are open source and can be used to help Trustees and policymakers explore the appropriate trade-off between managing for member’s best interests whilst being cognisant of passing the YFYS performance test.

### 3.11. An Extension: Time-Varying Expected Returns

The analysis in this paper assumes constant return expectations. An alternative to constant return expectations is time-varying expected returns. Extending the analysis to account for this introduces significant complexity and additional subjectivity as there exists a broad range of views on the topic.

We briefly comment on two forms of time-varying insights:

Case 1: Mean-reverting returns

- Here underperformance (outperformance) in one period creates higher (lower) expected returns in subsequent return periods.

- In our model higher return expectations following underperformance may reduce the likelihood of funds being “squeezed” out of their investment strategy.
- Strong belief in mean-reverting returns would result in a higher level of stable tracking error (we have not investigated the degree, but we expect it would be small).

#### Case 2: Momentum in returns

- Here underperformance (outperformance) in one period creates lower (higher) expected returns in subsequent return periods.
- In our model lower return expectations following underperformance may increase the likelihood of funds being “squeezed” out of their investment strategy.
- Strong belief in momentum in returns would result in a lower level of stable tracking error (we have not investigated the degree, but we expect it would be small).

For both cases it would be important to consider the degree of certainty the trustee has in the forecasting insight.

## 4. Conclusion

We have researched the impact on investment strategy of the YFYS performance test, adding objective analysis to the concerns flagged by industry. Our research reveals the degree to which the YFYS performance test may potentially constrain the way super funds design their investment strategies. If Trustees designed portfolios to explicitly account for the performance test, many super funds would need to significantly alter their portfolios. The results of this research highlight the conflict Trustees’ will face around managing for best member outcomes and prioritising the YFYS performance test.

A feature of our analysis is that we not only consider the likelihood of passing the test but also the likelihood of having to alter their investment strategy through time. Given unlisted assets will be a significant source of performance test tracking error for many funds, we think it is unrealistic to assume that funds will be able to easily alter their investment strategy (tracking error). This resulted in the concept of a stable level of tracking error.

We find the concept of banked performance has a short-lived benefit given the rolling application of the YFYS performance test whereby a new performance series is created each year. Therefore, this research has relevance to all super funds who will be subject to the YFYS performance test.

We believe that Trustees of super funds are faced with a very difficult situation. In our view the YFYS performance test does not align well with managing portfolios in the best interests of members. We think many Trustees will discover that portfolios designed to pass the performance test may have lower expected returns, be less effectively diversified, and bear more risks than portfolios constructed in the absence of the performance test.

# Appendix 1

In the tables below we set out the maximum acceptable tracking errors for different likelihood / stability levels. We assume return expectations are constant. Here:

- Full period fixed tracking error: the level of tracking error which delivers X% likelihood of passing the YFYS performance test for a single full 8-year period.
- Stable tracking error: the level of tracking error which delivers X% likelihood of not having to change the investment strategy over an 8-year period, accounting for rolling periods.

## 90% likelihood / stability

Expected Active Returns	Full Period Fixed Tracking Error	Stable Tracking Error
0%	1.1%	0.55%
0.5%	2.2%	1.1%
1.0%	3.3%	1.65%

## 95% likelihood / stability

Expected Active Returns	Full Period Fixed Tracking Error	Stable Tracking Error
0%	0.85%	0.45%
0.5%	1.7%	0.95%
1.0%	2.55%	1.4%

## 99% likelihood / stability

Expected Active Returns	Full Period Fixed Tracking Error	Stable Tracking Error
0%	0.6%	0.35%
0.5%	1.2%	0.7%
1.0%	1.8%	1.1%

# Appendix 2

In the tables below we set out the maximum acceptable tracking errors for different likelihood / stability levels. We assume the information ratio is constant. Here:

- Full period fixed tracking error: the level of tracking error which delivers X% likelihood of passing the YFYS performance test for a single full 8-year period.
- Stable tracking error: the level of tracking error which delivers X% likelihood of not having to change the investment strategy over an 8-year period, accounting for rolling periods.

## 90% likelihood / stability

Information Ratio	Full Period Fixed Tracking Error	Stable Tracking Error
0	1.1%	0.55%
0.2	2%	0.7%
0.4	9.5%	0.95%

## 95% likelihood / stability

Information Ratio	Full Period Fixed Tracking Error	Stable Tracking Error
0	0.85%	0.5%
0.2	1.3%	0.65%
0.4	2.7%	0.75%

## 99% likelihood / stability

Information Ratio	Full Period Fixed Tracking Error	Stable Tracking Error
0	0.6%	0.35%
0.2	0.8%	0.4%
0.4	1.2%	0.5%