cardano

What cashflow matching means for you

April 2022

- **As your pension scheme matures, it will become more important to meet the increased demands on cashflow**

- **There are certain investments, usually called 'cashflow-matching assets', that can help you meet pension payments, without incurring unnecessary transaction costs**

- **These cashflow-matching assets can be segmented into three broad categories;**
  i. Investment Grade Credit
  ii. Liquid Alternative Credit
  iii. Secure Income

- **To decide which assets are best for your scheme, you will need to consider:**
  i. The required return of your portfolio
  ii. The length of your journey plan
  iii. How much reliance you can place on contributions from your sponsor

- **These decisions should ideally be made within an integrated risk management framework**

- **The holistic management of your LDI portfolio and your cashflow portfolio is essential to success**

Types of assets for your cashflow portfolio

There are three broad categories of assets that can be used for your cashflow portfolio. These are investment grade credit, liquid alternative credit and secure income. Each of these has their own characteristics and how they are used will be dependent on each scheme's objectives and circumstances.

The table below outlines the characteristics of each of the cashflow-matching assets:

	Investment Grade Credit	Liquid Alternative Credit	Secure Income
Examples of holdings	• Bonds issued in public debt markets by high quality corporates • Bonds issued by supranational, sub-sovereigns and government agencies	• High-yield credit - bonds issued in public debt markets by speculative grade corporates • Securitised debt • Collateralised debt obligations • Leveraged loans	• Infrastructure debt • Real estate debt • Commercial ground rents • Social Housing • Royalties • Direct lending
Return	Low	Medium	High
Credit Risk	Low	Medium	Low
Liquidity	High	Medium	Very Low
Typical Credit Rating	Above investment grade	Below investment grade	Generally unrated but investment grade equivalent
Management Approach	In-house through Cardano's credit team	3rd party external managers	3rd party external managers

"The key takeaway is that the appropriate mix of cashflow-matching assets will be unique to each scheme."

Investment grade credit is probably the best understood and most commonly used cashflow-matching asset. This is because income from high quality corporate bonds is generally very predictable. The drawback of using this asset class on its own is that the expected return is low, so most schemes can only 'afford' it further along on their funding journey.

On the opposite side of the spectrum is secure income, which can produce higher levels of return (and income). However, the higher return comes at a higher risk, mainly in the form of liquidity risk.

The key takeaway is that the appropriate mix of cashflow-matching assets will be unique to each scheme. The approach you adopt depends on the length of your scheme's journey plan and the return requirements of the scheme as it progresses to its funding objective.

What are the common characteristics of all cashflow-matching assets?

Cashflow-matching assets will be 'debt-like' rather than 'equity-like' - the relationship between the investor and the investment will be more comparable to that of a lender / borrower rather than that of a shareholder / company. The asset will contain a contractual obligation for known sums to be paid at known dates, to the investor over a known (fixed) time period.

A risk premium (credit spread) compensates the investor for taking on either; more illiquidity risk, higher volatility and/or higher default risk relative to risk-free assets.

A well-structured cashflow portfolio should ultimately be a 'buy and hold' strategy, therefore liquidity risk and volatility risk are not of paramount concern.
On the other hand, default risk is very important. Borrowers are not guaranteed to pay income and/or principal back to you the investor. In some circumstances borrowers will not be able to pay back and investors will only be able to recover a portion of their original investment whilst forgoing any future income payments.

For this reason, an allocation to cashflow-matching assets must always be made mindful of the wider objectives, risk tolerance and the return requirements of a scheme's overall investment strategy using an integrated risk management approach.

"...an allocation to cashflow-matching assets must always be made mindful of the wider objectives, risk tolerance and the return requirements."

Managing default risk

There are three components to consider when thinking about default risk:

1) Probability of default - the likelihood that the borrower does not pay all the expected cash to the investor. For instance, high yield bonds have a higher probability of default than investment grade corporate bonds

2) Loss given default - the difference between the principal amount outstanding, if the investment defaults, and the value received from any subsequent recovery proceedings

3) Timing of default - When a default occurs, not only might a loss occur with respect to principal but, all future expected cashflows will be forgone too. Therefore, defaults that happen soon after the inception of a 'buy and hold' or 'buy and maintain' cashflow portfolio can be more damaging to the overall strategy than those that occur further in the future.

Integrating covenant risk, required return and length of the funding journey

When the risk profile of a scheme's investment strategy changes, the balance of risks that are being taken by the scheme and its sponsor will change too. It is the sponsor that is the ultimate underwriter of the risks that the scheme carries.

Specifically, when trustees allocate to cashflow-matching assets, the scheme will generally be:

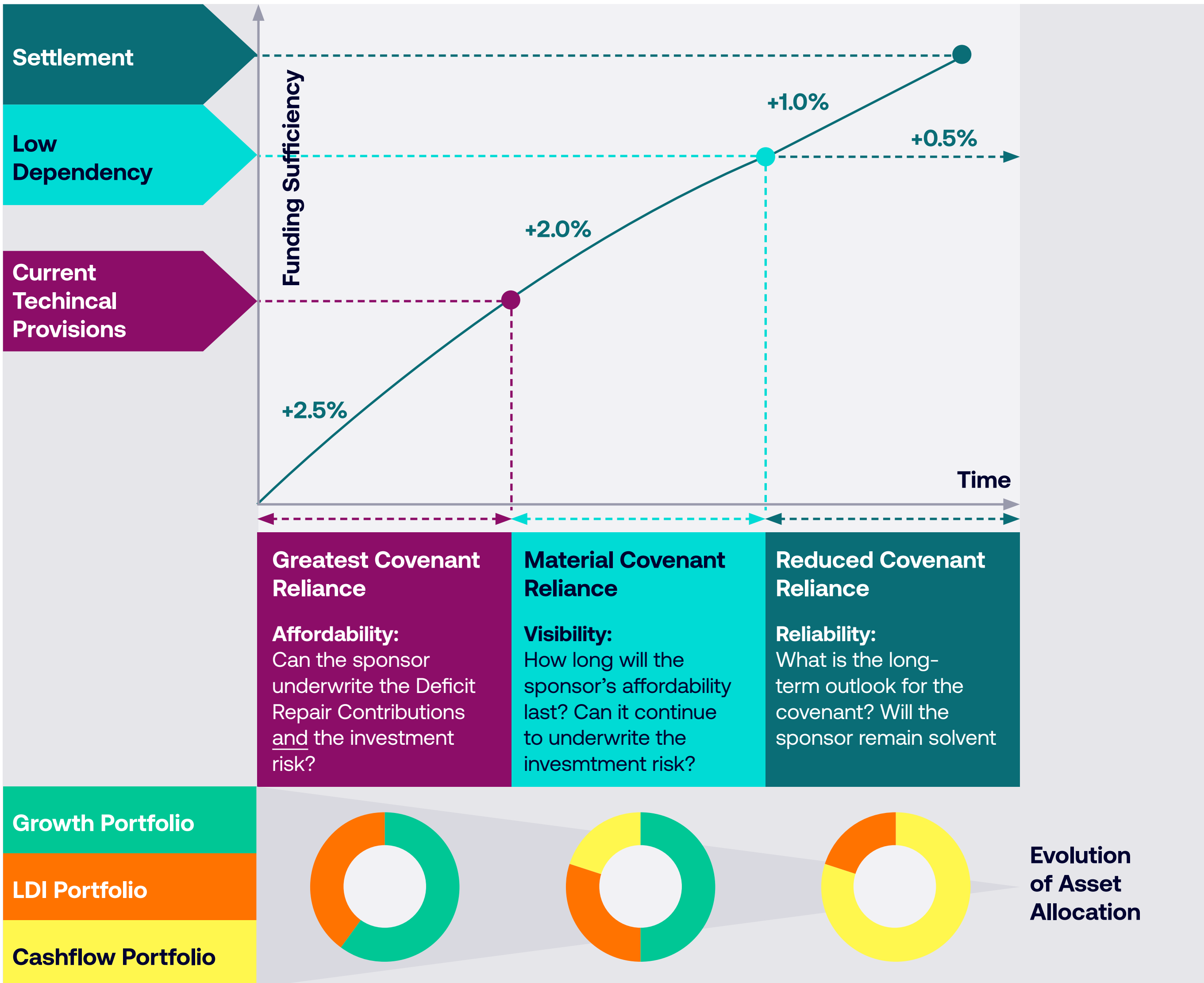
- taking less investment risk
- reducing its investment returns, and
- changing its liquidity profile

"...decisions should be made with careful regard to the scheme's journey plan and the sponsor's financial position."

Accordingly, these decisions should be made with careful regard to the scheme's journey plan and the sponsor's financial position.

Fig. 1 illustrates how an allocation to cashflow-matching investments might change according to return requirement and remaining length of the funding journey.

Fig. 1. *Schematic representation of the evolution of a scheme's asset allocation, over time, as return requirements fall. Covenant reliance is shown to transition as the journey plan progresses too. This illustrates, from an integrated risk management approach, the appropriate positioning of the cashflow portfolio*



From left to right, as the return target reduces, we would expect most schemes to allocate an increasing proportion of their portfolio to cashflow-matching assets. This happens because:

1) A scheme's funding level is improving, so it can gradually de-risk
2) The reliance that the scheme has upon its sponsor is reducing
3) The scheme requires more income as it becomes more mature

The exact type of cashflow-matching assets that a scheme should incorporate also depends upon the remaining length of its journey plan:

- If the time horizon is 'short', trustees should focus on ***liquid*** investments – investment grade credit and liquid alternative credit. This shorter horizon usually involves schemes that are likely to consider buyout as their end-game.
- If the time horizon is 'long' (usually over 10 years), trustees can also explore asset classes grouped under 'secure income'. This is because these schemes can tolerate more liquidity risk. The exact reason for the longer time horizon can stem from a lower current funding level, or simply due to the desire to 'run off' the assets rather than transfer them to an insurer or a consolidation vehicle.

Selected case studies for different hypothetical schemes are presented in Appendix 1.

Integrating cashflow-matching portfolios with LDI

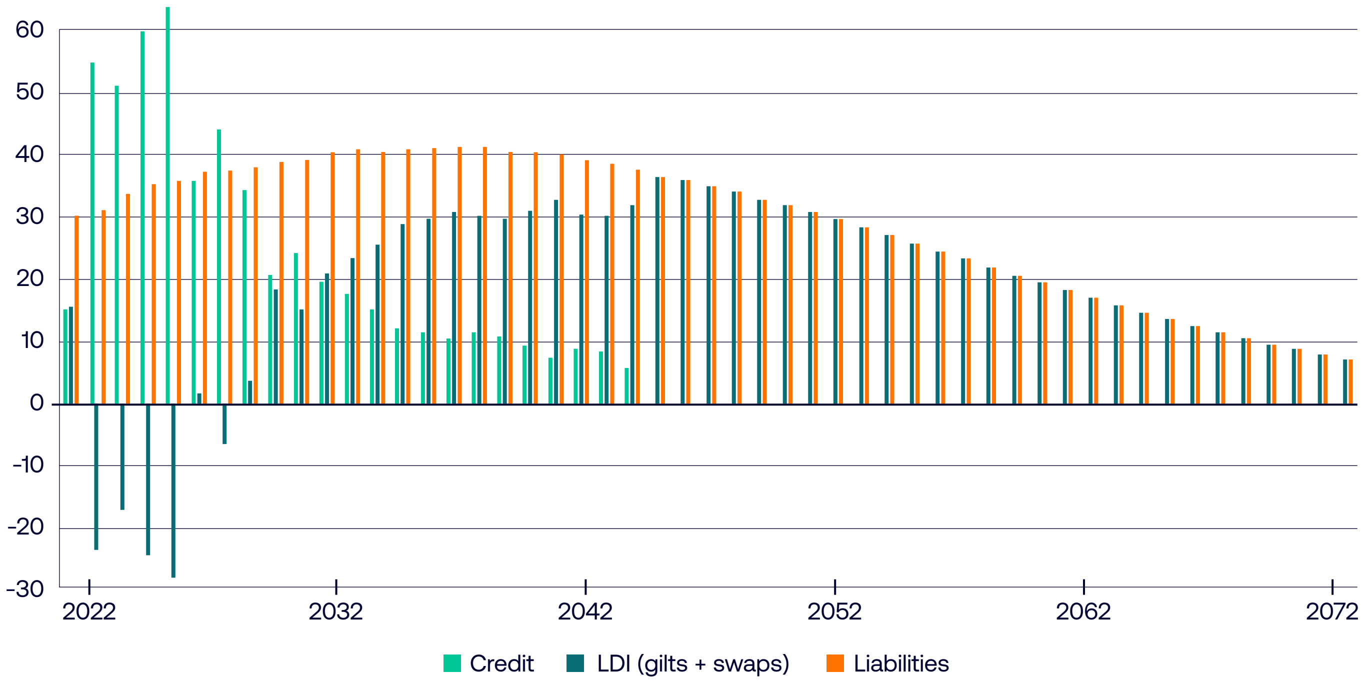
Cashflow-matching assets provide an element of liability hedging because of their interest rate sensitivity. It is therefore essential that the cashflow portfolio is carefully integrated into the overall liability hedging strategy.

This can be achieved by using a bespoke LDI portfolio to complement interest rate sensitivity of the cashflow-matching assets:

- Since the most liquid cashflow-matching assets tend to have relatively shorter maturities, there will be an element of 'over-hedging' once a scheme invests in investment grade credit. This is shown in Fig. 2.
- The downside of this feature can easily be overcome. A bespoke LDI portfolio working alongside the cashflow-matching portfolio can do all the fine-tuning. The LDI manager can 'short' positions at the front end of the risk-free curve so that the liability profile is matched with high precision.
- Your LDI and cashflow portfolios need to work as one and co-ordinate activity. If they are managed by different companies, you risk having suboptimal results and increased operational errors. By having both matching portfolios managed under 'one roof', schemes of all sizes can achieve excellent hedging precision on a cost-effective basis.

"...the cashflow portfolio is carefully integrated into the overall liability hedging strategy"

Fig. 2. *Schematic representation of a typical pension fund's benefits disbursements ('Liabilities') and how this can be met from cash inflows from its investment portfolio. Note the imprecision of a typical cash matching portfolio ('Credit') that requires to be corrected by fine-tuning within the LDI portfolio*



Summary

A well-defined approach to cashflow-matching is a valuable tool in your toolkit. It is especially important for mature schemes as they become increasingly cashflow negative. An allocation to cashflow-matching assets should be made in the context of the wider objectives, risk tolerance and the return requirements of a scheme's overall investment strategy, using an integrated risk management approach.

Sustainability impact

Cardano considers sustainability factors and evaluates real-world sustainability impact in all our investment processes. These real-world impacts are in line with:

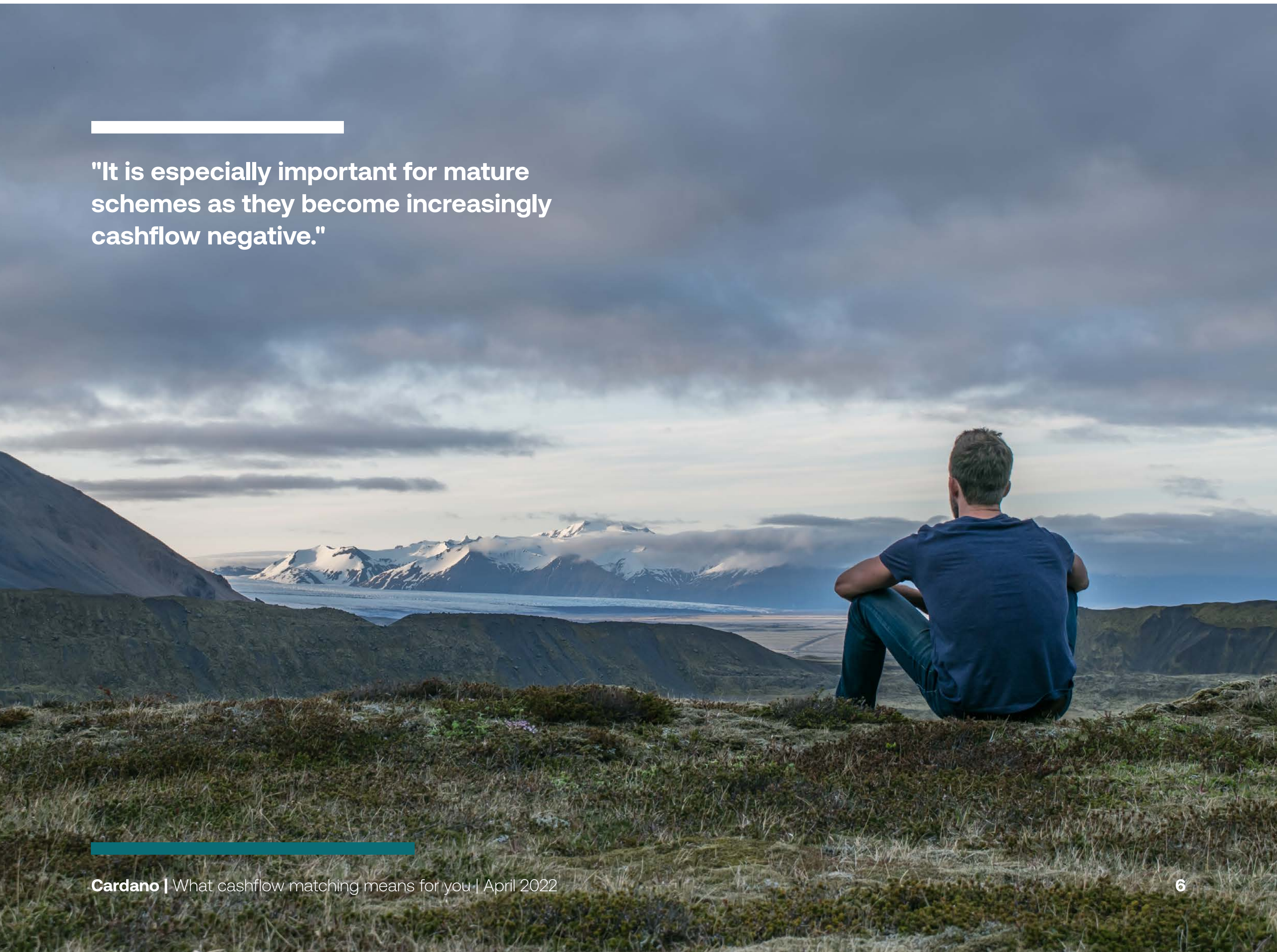
- The Paris climate agreement including achieving carbon neutrality by 2050, with 50% emissions reduction target by 2030
- Promoting a fairer society. We're partnering with Big Society Capital to invest in social housing in the UK
- Supporting sustainable emerging market developments

Our approach is investment-led, grounded in science and ambitious. We focus on where we can practically make a difference. We have an internally managed framework that assesses and monitors investments closely on sustainability criteria.

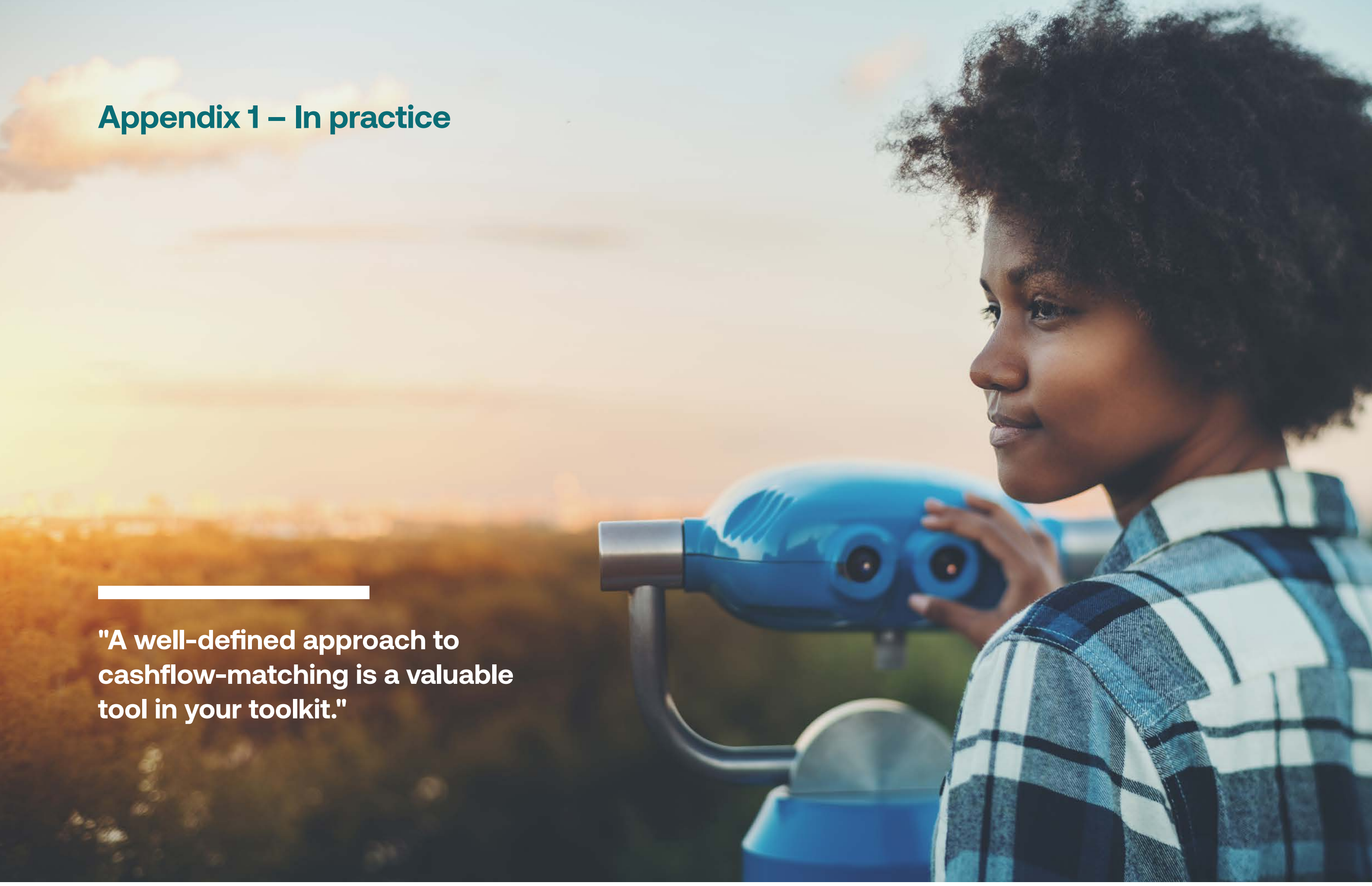
With specific reference to cashflow matching portfolios, we invest in high-quality corporate bonds which are subject to direct analysis of their sustainability credentials. We also incorporate impact investments (e.g. social housing) into our cashflow portfolios.

When investing via derivatives we assess the sustainability of our counterparty.

"It is especially important for mature schemes as they become increasingly cashflow negative."



Appendix 1 – In practice



"A well-defined approach to cashflow-matching is a valuable tool in your toolkit."

Scheme A

Return target of +1.5% and a journey plan anticipating buy-out within 5 years

	Required Returns: Medium	**Appetite for Liquidity Risk:** Low	**Time Horizon:** Short
Current Position	• A modest funding deficit and a short time horizon for investment decision making • Comfortably within the 'Reduced Covenant Reliance' range. Able to de-risk • Will be cashflow negative before buy-out is completed		
Client Objective	• Buy-out preparedness - achieve a fully funded position with assets that are readily saleable to an insurer • Establish accurate cash matching for a period before buy-out • Maintain precise liability matching throughout the journey plan		
Investment Constraints	• Requirement to be 100% liquid within 5 years • The inability to benefit from the illiquidity premium of secure income assets • The minimisation of exposure to insurers' pricing variation		
Cardano's Solution	• The in-house team will manage investment grade credit as the core of the scheme's cashflow portfolio. We may also appoint third party managers in the liquid alternative credit asset class • Any residual allocation to a growth portfolio will be reduced over time as progress towards the funding objective is achieved • At all times, the LDI, cashflow and growth portfolios will be holistically managed so as to keep the scheme on its journey plan		

Scheme B

Return target of +2.5% and a journey plan that anticipates a buy-out in over 10 years' time

	Required Returns: High	**Appetite for Liquidity Risk:** Medium	**Time Horizon:** Long

Current Position

- A significant funding deficit but with a relatively long horizon for investment decision making
- Positioned within the 'Greatest / Material Covenant Reliance' range
- Highly likely to be cashflow negative before buy-out is completed, but cashflow-matching is not an immediate priority

Client Objective

- To achieve a funding position within the parameters of the 'Reduced Covenant Reliance' range - the establishment of a position similar to Scheme A

Investment Constraints

- A return requirement that is higher than that available from cashflow-matching assets
- A requirement to retain flexibility given a higher likelihood of the need to de-risk or re-risk in the future

Cardano's Solution

- High reliance upon sponsor covenant strength over a prolonged period of time
- Initially the scheme's investments will incorporate an LDI portfolio and a growth portfolio
- As the scheme's funding position transitions, a cashflow portfolio will be introduced. The core of this portfolio will be investment grade credit and liquid alternative credit. Whilst the anticipated buy-out date remains far away, secure income assets will also be used
- At all times, the LDI, cashflow and growth asset portfolios will be holistically managed so as to keep the scheme on its journey plan

Scheme C

Return target of +1.0% and a journey plan that does not anticipate a buy-out

	Required Returns: Low	**Appetite for Liquidity Risk:** High	**Time Horizon:** Very long

Current Position

- A modest funding deficit and no time constraints for investment decision making
- Positioned within the 'Reduced Covenant Reliance' range
- Will be cashflow negative in due course

Client Objective

- To achieve and subsequently maintain a funding position that is consistent with long-term self-sufficiency
- An asset allocation that is consistent with the trustees' desire to remain involved with ongoing investment strategy

Investment Constraints

- A return stream that is derived from the most efficient exploitation of investment risk premia and liquidity risk premia
- An income stream that matches the outflows that are expected from all maturing liabilities

Cardano's Solution

- A bespoke combination of an LDI portfolio, a cashflow portfolio and a growth portfolio
- Long-term cash generation will be emphasised as an investment objective
- A broad allocation to a wide range of cashflow-matching assets will be used; a relatively high allocation to secure income would be appropriate
- To provide additional confidence in the predictability of cashflows, Cardano's in-house investment grade credit capabilities could also be introduced

cardano

Cardano
9th Floor
6 Bevis Marks
London
EC3A 7BA

T: +44 (0)20 3170 5910
E: enquiries@cardanoadvisory.co.uk