INSTITUTIONAL ADVISORY & SOLUTIONS

CENLAND CORPORATION (III)

The CIO and the Transition to DC

December 2021

IAS Case Study
MT-2021-01

This material is provided for educational purposes only. Please see "Important Disclosures" at the end of this presentation.

CENLAND CORPORATION (III)
The CIO and the Transition to DC

Dan Woodbridge, 51, CIO of Cenland's in-house management organization for its US Defined Benefit (DB) plan, was upbeat returning to his office from his Q3 2021 quarterly update meeting with Denise Liu, Cenland's CFO. Dan and Denise were both excited about meeting back at the office now that Cenland allowed employees to voluntarily return in mid-October. For both, this was their first in-person meeting since the onset of the pandemic in March 2020. Dan was amazed that the fish in his aquarium were still alive – although reduced in number. He made a mental note to do something special this Christmas for the thoughtful maintenance and security staff.

Dan and Denise had a productive discussion about recent developments related to Cenland's retirement plans. It came as no surprise that Cenland's DB portfolio continued to perform well over the past year. Apart from managing a top-performing DB portfolio over many years supported by a strong in-house investment team with expertise in both public and private markets, Dan also started overseeing Cenland's DC menu design since the company decided to close its DB plans in late 2019. Although disappointed by the decision to close the DB plans, it galvanized Dan's determination to improve the financial security for Cenland's 401(k) plan participants by providing diversified and cost-effective DC investment options.

Unexpectedly, Dan's attention was diverted in September 2021 when Cenland announced its acquisition of a UK-based telecommunications company, **Envision**. Cenland's management team believes that this acquisition gives Cenland the opportunity to stay competitive and expand its global footprint in the fast-moving telecommunications industry. Although Cenland employees are currently all US-based, Cenland has a global customer base of which non-US customers contribute nearly 10% of the company's annual revenue. The acquisition will give "New Cenland" the opportunity to leverage Envision's local expertise to improve customer retention and its enhanced service offerings, while allowing Cenland to maintain a high degree of control.

Only a few days after the news announcement, Denise told Dan that the Envision acquisition was expected to close in July 2022 and that Dan would oversee the investment choices in Envision's DC plan. Envision had closed its DB plan years earlier and had transitioned smoothly to a UK single employer DC scheme overseen by its own internal investment management team. Dan suddenly found himself in a position not

Dr. Michelle (Yu) Teng prepared this case with the assistance of Ms. Aili Chen PGIM IAS. We would also wish to thank Ms. Jenny Staley, PGIM IRG and Ms. Mikaylee O'Connor, PGIM IRG for their valuable contributions to the case. This case was developed solely on the basis for discussion at the 2021 PGIM IRG Ascent Program.

only having to transition Cenland employees to a DC plan but now had to oversee an established, and foreign, DC plan. "When it rains, it pours," Dan momentarily mused, but then began thinking through the implications of the acquisition for his team.

Denise encouraged Dan to get familiar with Envision's scheme and think about how he might collaborate with Envision's internal DC team to ensure they provide members across the new combined company with an appropriate range of investment options after the acquisition. To get him started, Denise sent an email introducing Dan to the head of Envision's DC team, Oliver Grother, 45, a nice British fellow with good manners. Originally from Lancashire, England, Oliver first studied electrical engineering at UCL (University College London) before switching to mathematics and economics at LSE (the London School of Economics and Political Science). He received his Master's in management finance from the University of Melbourne. Oliver started his career as a research analyst at the UBS Melbourne office, then returned to the motherland a few years later. He worked as a portfolio manager in UBS Asset Management in London and joined the Envision asset management team five years ago. He brought considerable investment experience and a global perspective to the team at Envision.

Dan and Oliver talked often via Zoom, discussing Envision's DC plan and the UK retirement industry at large and, in the process, became reliable colleagues. Dan was particularly interested in hearing about the experiences Oliver gained and the lessons he learned from working directly in the UK industry – a US player like Cenland would never have the same access or insights, otherwise. They both believe there would be a lot of learning and synergy between the two teams, and they hope to have face-to-face conversations when Dan travels to the UK in early 2022.

During the quarterly meeting Denise gave Dan his marching orders: "Given Envision's technological superiority, we expect a lot of employee movement between Cenland and Envision. We want to encourage this cross-fertilization of expertise and ideas. What we would like to achieve is that when employees relocate from the UK to the US, or *vice versa*, they will not feel their retirement incomes are significantly impacted." Denise added, "You were able to start incorporating private asset investment options into our 401(k) plan so that our employees' underlying investment exposures did not change dramatically as we made the transition from DB to DC. It is time for you to think more broadly about embracing private assets in both the Cenland's US DC plan and the incoming Envision's UK DC scheme, as our company expands globally."

Looking out the window in his office, Dan saw the beautiful foliage that had just started to change color in Cenland's New England HQ campus. He missed the entire season last fall.

Dan spent the rest of the afternoon straightening out his thoughts. In addition to what he discussed with Denise, there are other things to consider as the company expands from New England to England. The global retirement industry continues to evolve, and he needs to stay ahead of the changes. He also wants to carefully review the details of Cenland's and Envision's plans to make sure he is not missing anything. He pulled out a notebook and started scribbling down some key points before corralling his investment team.

Current State of Cenland's US Plans

Cenland's US DB Plan

All Cenland's employees were covered by a corporate DB plan until December 2019, at which point Cenland decided to close its DB plan and started offering a DC plan with generous company matching to new employees.[1] Just a year later in 2020, Cenland froze the DB plan to accelerate de-risking of the plan.[2]

Now, almost a year later, Cenland's remaining DB plan is more mature as more employees approach retirement. After paying all benefits to the remaining participants, Cenland's DB plan still has approximately $11b PBO (Projected Benefit Obligation). Even though there is no significant year-over-year increase in the pension liability discount rate (2.87% at the end of Q3 2021 *vs.* 2.65% at the end of Q3 2020), the DB plan's funded status improved significantly, rising above 92% (*vs.* below 90% same time last year), primarily due to Dan's team's excellent investment performance. After the funding ratio hit the 90% mark, the DB portfolio allocations shifted more towards allocations to LDI (liability-driven investing) assets and away from growth assets, including private assets. Without selling any private equity (PE) investments in the secondary markets and suffering a haircut, the PE team led by Vinita Mody adeptly followed a commitment pacing strategy to gradually trim the PE allocation. Given the stable income and diversification benefit seen so far from the newly added real estate (RE) debt investments, Dan decided to keep the 4% RE allocation. Exhibit 1 shows Cenland's current asset allocation compared to Q3 2020.

Dan expects 2021 to be a big year in the US pension risk transfer (PRT) market. With funded status at their highest levels since before the 2008 financial crisis, many plan sponsors are actively looking to transfer pension risks to insurers. In 2012, the GM and Verizon PRT transactions transferred a combined $33b to insurers, which demonstrated the market's ability to efficiently transfer a large amount of pension risk off a plan sponsor's balance sheet. Almost ten years later, the US PRT market is even more developed. Some of the larger deals coming to market in 2021 are driven by plan sponsors who want to move towards a full plan termination.

Given Cenland's determination to reduce pension costs to enhance its overall competitiveness, especially with the recent acquisition of Envision, Dan expects Cenland to further accelerate offloading their DB liabilities and head towards a full plan termination sometime soon. Dan knows a full plan termination typically takes 18m to 2y so he has some time to think about how to manage the "End-State" DB portfolio, especially the remaining allocations to private assets in the portfolio which are more costly and difficult to liquidate.[3] He needs his investment team to formulate a feasible plan to gracefully terminate Cenland's DB plan in the next two years.

Cenland's US DC plan

Cenland launched its inaugural 401(k) DC plan in late 2019 immediately after announcing the closing of the DB plan. Since inception, the DC investment options have been experiencing significant net inflows as the company continued to grow, adding new (and relatively young) employees.

[1] Y. Teng, "Cenland Corporation: The CIO and the Closing of the DB Plan," PGIM IAS Case Study, December 2019.
[2] Y. Teng, "Cenland Corporation(II): The CIO and the Freezing of the DB Plan," PGIM IAS Case Study, December 2020.
[3] Y. Teng and J. Shen, "Asset Allocation for 'End-State' Portfolios," PGIM IAS, September 2019.

Under Dan's leadership, Cenland offered 401(k) participants a well-designed DC investment menu, including diversified investment options. Currently, most (97%) participants are invested in the qualified default investment alternative (QDIA) which is a custom target-date fund (TDF) designed by Dan's team. The fund's asset allocation is designed to progress from more aggressive (almost 100% in growth assets) towards more conservative (up to 85% in fixed income) as participants approach and go beyond their target retirement dates – a glidepath structure. What makes Cenland's TDF unique is that it includes private assets such as direct real estate and infrastructure in addition to public equity and fixed income, providing participants with diversified portfolios as they had enjoyed under the DB plan. Until recently, no TDF has incorporated exposure to these private investments. This gratified Dan, especially as it kept his crackerjack investment team working together and energized. Exhibit 2 shows the glidepath of Cenland's TDF.

Envision's UK DC Scheme

Envision is a UK telecommunications company headquartered in Newbury, Berkshire, England. It predominantly operates network services in the UK and continental Europe. In 2016, it closed its DB plan to new employees and switched employees to a DC plan to keep a lid on operating costs. It took Envision two years to fully terminate the DB plan by distributing lump sum payments to participants and executing pension risk transfer deals with insurance companies.

As of September 2021, the DC plan has £800m (approximately $1.06b at $1.33/£) under management (up from £550m in 2020) with expected annual contributions of £240m. It has over 70,000 members, made up of active and retired employees, and the day-to-day investment management is delegated to external investment managers. Currently, 95% of participants are invested in the Default Lifecycle option – designed by Oliver's team – where fund allocation is adjusted automatically over time. The remaining 5% are either invested in an Alternative (Lower-Risk) Lifecycle option or in self-selected funds.

With the Default Lifecycle option, asset allocations are gradually moved into cash and bonds to manage risk as participants move closer to retirement. By the time participants reach retirement age (*i.e.,* the consolidation phase), their accounts will have approximately 75% in fixed income and 25% in cash. On the other hand, younger members who are in their accumulation phase are heavily invested in equities. Currently, the majority of the plan's assets are allocated to equities, followed by bonds, a small allocation to property, and cash. Exhibit 3 shows the Default Lifecycle Fund's aggregate asset allocation as reported at the end of Q3 2021.

Recent Developments in the US DC Market

Under Dan's leadership, Cenland's frozen DB plan's management team is responsible for designing and regularly reviewing the underlying investment offerings for Cenland's DC plan. Like many investment professionals, Dan is a voracious reader – whether it is books, academic journals, or newspaper articles – he reads all the time! He likes to cut out interesting articles and paste them into his daily diary. Although Dan has happily embraced new technology, sometimes he still likes things the old-fashioned way. Given the nature of his work, he reads the *Financial Times* and *Pension & Investments* faithfully, closely following any developments in the US DC industry and elsewhere, and actively monitoring the impact of the pandemic on the DC industry.

Despite market volatility, DC participant balances increased in 2020, with the increase generally higher for younger, less-tenured workers (29%) and lower for older, longer-tenured workers (17%), according to the Employee Benefit Research Institute (EBRI). While more than 90% of plan sponsors maintained the pre-pandemic levels of company match, approximately 46,000 plan sponsors (8%, mostly small businesses) cut employer contributions during the pandemic based on data from the Plan Sponsor Council of America (PSCA). The use of Coronavirus Related Distributions (CRDs) – a sudden and unexpected policy change in response to the pandemic – has been limited.[4] Between 3% and 8% of participants requested a distribution, with an average distribution of less than $15,000 (well below the $100,000 limit) based on reports from leading recordkeeping providers.[5]

Dan monitors the ongoing regulatory changes in the industry. The past two years turned out to be eventful for retirement regulation and legislation. Potential changes are coming from all directions: legislation supporting automatic 401(k) enrollment to boost employee participation and retirement savings, proposals to amend the regulations on ESG investing in ERISA (Employee Retirement Income Security Act) plans, *etc.* A few proposed regulatory changes have caught Dan's eye among those being considered by the government and regulatory bodies, which he believes could have ramifications on how to structure the underlying investment choices for plan participants.

While private equity investments have long been part of DB plans, in the US, DC plan sponsors generally have not incorporated private assets in the investment options due to lack of regulatory guidance and sponsor apprehension. However, in June 2020, the Department of Labor (DOL) issued an information letter that added clarity around offering a professionally managed asset allocation fund with a private equity component in a DC plan.[6] It is a positive signal from the DOL on including private assets in DC plans. US Secretary of Labor Eugene Scalia said that "The Letter helps level the playing field for ordinary investors and is another step by the Department to ensure that ordinary people investing for retirement have the opportunities they need for a secure retirement."[7]

There has also been a regulatory focus on default investment options since the Pension Protection Act of 2006 (PPA). While several investment options are eligible under the QDIA rules, TDFs have been the most prevalent to date, growing by a factor of 10 over the last decade. However, the QDIA landscape looks poised for changes. Many have voiced concerns that one size may not fit all, especially as participants age and their needs diverge. In contrast, custom TDFs or managed accounts, which offer customized

[4] A coronavirus-related distribution (CRD) is a distribution made from an eligible retirement plan. CRDs expired in December 2020 and were not extended to 2021 despite the continuing pandemic and expectation of an extension by the new administration.
[5] "Defined Contribution Quarterly Q1: Retirement Policy in 2021," Goldman Sachs Asset Management, 2021.
[6] "DOL opens gate for private equity in DC plans, but big rush not expected," Pensions & Investments, 15 June 2020, from https://www.pionline.com/defined-contribution/dol-opens-gate-private-equity-dc-plans
[7] "U.S. Department of Labor Issues Information Letter on Private Equity Investments," U.S. Department of Labor, 3 June 2020, from https://www.dol.gov/newsroom/releases/ebsa/ebsa20200603-0

allocations, might be a better fit. There is an emerging trend around the desire for increased personalization which could lead to an evolution of both TDFs and QDIAs.[8]

Dan is aware of the numerous M&A and strategic actions underway in the industry. In April, private equity firm Stone Point Capital and Singapore's sovereign wealth fund GIC announced plans to buy a majority stake in Ascensus, a retirement and savings account provider. Then in July, Empower announced its plan to acquire Prudential's retirement business for $3.6b which is expected to close in Q1 2022.[9] Dan believes these types of transactions will allow retirement plan recordkeeping companies to continue building scale, which is an important driver of efficiencies.[10]

Recent Developments in the UK DC Market

Across the Atlantic, the UK DC industry is going through its own transition. In addition to benefitting from Oliver's local knowledge and insights, Dan and his team now also keep a close eye on any DC-related headlines coming out of the UK.

In the UK, DC schemes are much smaller in aggregate compared to DB schemes but are growing rapidly (*e.g.*, in the year before the pandemic, aggregate DC assets grew by 23% while DB assets were flat). Despite the extreme market volatility during the early months of the pandemic, the positive momentum in the UK DC market has persisted with DC assets growing by 4% (from £471b in 2020 to £490b in 2021).[11]

While the pandemic's short-term impact has been muted (thank you Bank of England and Parliament!), the lessons learned are likely to have a lingering influence. As Oliver explained, "DC schemes learned that long-term investment horizons and diversified portfolios have helped them cope with extreme market events." For plan participants who were near or in retirement, the impact of the significant market drawdown was mitigated by lifecycle funds where investments had already shifted away from growth assets, such as equities, towards conservative assets, such as bonds. Covid-19 even presented DC schemes with new investment opportunities.

In August, the UK government issued a call to action urging pension funds, including DC funds, to invest in UK infrastructure projects and private equity/venture capital to help small businesses rebuild post pandemic. Specifically, the prime minister and chancellor Rishi Sunak sent a letter to the investment industry, encouraging UK institutional investors to direct their funds to longer-term assets such as infrastructure, which includes bridges, roads, and wind farms.[12]

Alongside the broader government drive, the Financial Conduct Authority (FCA) approved an open-end fund structure (Long-Term Asset Funds) that will provide DC plans with a more liquid vehicle to access

[8] "Defined Contribution Quarterly Q3 2021: (R)evolution of the QDIA Landscape," Goldman Sachs Asset Management, 2021.
[9] "Stone Point, GIC to Buy Ascensus In Deal Worth $3 Billion," Bloomberg, 25 April 2021, from https://www.bloomberg.com/news/articles/2021-04-26/stone-point-and-gic-said-to-near-3-billion-deal-for-ascensus
[10] "Empower bulks up by adding Prudential unit," Pensions & Investments, 26 July 2021, from https://www.pionline.com/defined-contribution/empower-bulks-adding-prudential-unit
[11] "A Whole New Investment Universe What's Holding UK DC Schemes Back from Investing in Private Markets?" DCIF, 2021.
[12] "UK's Nest pension fund plots £1.5bn push into private equity," Financial Times, 27 August 2021, from https://www.ft.com/content/42201a66-221a-4be5-84d7-49de953ed180

illiquid investments. Currently, reduced asset liquidity that might impact the ability to make pension payments is considered one of the main barriers to investing in such assets. The FCA said because liquidity risk prohibits investors from making significant allocations to illiquid assets, the Long-Term Asset Funds will have specific liquidity management features (*e.g.*, longer redemption periods so that investors do not have to sell assets at unfavorable prices) to help investors manage this risk.[13]

Another effort by the UK government to reduce regulatory barriers involved loosening the fee cap on DC funds. UK DC plans have largely steered clear of private equity, which is more expensive to manage. Plan sponsors are concerned that performance fees or carried interest, typically levied by private markets managers, would erode retirement returns and increase the risk of breaching the 0.75 % fee cap that applies to default funds. In October, however, the government has approved an initiative to allow DC schemes to spread performance fees over multiple years, so they are less likely to breach the cap in any given year.[14] The government is also considering an outright loosening of the fee cap to encourage greater investments in illiquid assets.[15]

There is also a trend for single-employer DC schemes to consolidate into **Master Trusts** to achieve scale. Recently, one of the UK's largest master trusts, NEST, announced plans to plot more than £1b into private equity – the first move by any British DC plan into the asset class. NEST plans an initial £1b at the beginning of 2022, followed by £250m every year through 2024 with a target of 5% of the portfolio invested in the asset class by the end of 2024.[16] This is not its first adventure into illiquid assets, though. It first tested the water in private credit in 2019 (where both the management fees and carried interest are lower compared to private equity), followed by an investment in infrastructure equity.

However, as a new player in the private equity markets, NEST will not be a price-taker. It is challenging the prevailing practice in the private equity markets by refusing to pay the performance fees, arguing that it is beyond the affordability of itself and most other DC schemes. The bargaining power comes from NEST's scale (£20b). In addition, under NEST's model, GPs can transact on co-investments relying on NEST's ability to commit large amounts of money that can be evergreen without the need for repeated fundraising.[17]

On multiple occasions, Oliver brought up ESG reporting as something at the top of his mind. "ESG is a bigger issue in the UK than it is in the US. Regulatory changes have intensified over the past two years on improving standards of ESG reporting for DC schemes, although it may still be some time before we will be required to implement these carbon accounting measures," explained Oliver. While schemes with £5b or more in assets would have to comply with the requirements beginning in October 2021, those with at least £1b have until October 2022.[18] Specifically, the new rules require DC schemes to disclose "financially

[13] "FCA approves open-end fund structures for illiquid investing," Pensions & Investments, 25 October 2021, from https://www.pionline.com/regulation/fca-approves-open-end-fund-structures-illiquid-investing
[14] "Pension funds rebuff government fee liberalisation plan," Financial Times, 19 April 2021, from https://www.ft.com/content/642485b1-9128-48b0-903c-7265e09ebf8c
[15] "U.K. eases path to DC illiquids but challenges remain for plans," Pensions & Investments, 15 November 2021, from https://www.pionline.com/defined-contribution/uk-eases-path-dc-illiquids-challenges-remain-plans
[16] "NEST challenges private equity fees," Top1000Funds.com, 30 September 2021, from https://www.top1000funds.com/2021/09/nest-challenges-private-equity-fees/
[17] *Ibid.*
[18] "UK Pensions Briefing: Climate change governance and reporting requirements for pension scheme trustees", March 2021, from https://www.nortonrosefulbright.com/en/knowledge/publications/654b8016/uk-pensions-briefing-climate-change-governance-and-reporting-requirements

materially" ESG factors and consider the potential impact of climate change in their investment process.[19] "We have a lot of work to do," said Oliver.

Looking Ahead of Cenland's DC Plans

As Cenland expects to complete the Envision acquisition in the summer of 2022, Dan does not have much time to sort out the investment choices for both the US and UK DC plans. Although the DC accounts are participant-directed, Dan and his team need to carefully select the underlying investment options that can generate income and capital growth, which together with new contributions from both the company and the participants themselves, help them stay the course for retirement. Dan believes that plan members should have access to a wide range of opportunities across the investment universe just as the DB participants once did. Leveraging Cenland's internal investment expertise, Dan wants to give plan participants the opportunity to access illiquid private assets as part of a well-diversified portfolio.

Many of the world's largest and most successful DC plans have substantial allocations to illiquid private assets. "Australia superannuation funds have substantial allocations to illiquid assets, which provide long-term income and diversification from the public equity and bonds in their portfolios," said Oliver. A report from Preqin found a trend of Australian superannuation schemes diversifying further into alternative assets. They also have a higher propensity to allocate to real estate and infrastructure relative to global DC funds.[20]

In the US, unlike DB schemes which have long embraced illiquid assets, DC schemes currently have little allocation to such assets. CEM Benchmarking found that, between 1997 and 2014, DB schemes outperformed DC schemes by an annualized 1.1%, benefitting from allocations to real estate, hedge funds and private equity. In contrast, DC schemes had no allocation to these illiquid asset classes during this period, restricting their overall performance.[21] Within the DC industry, public plans are generally more sophisticated than the private sector in their ability to access private markets. However, the private sector is catching up by starting to first incorporate direct real estate investments as a way to get their foot in the door.[22]

An immediate next step would be for Dan and his team to investigate the implications of further integrating illiquid private assets into the DC portfolios. Dan recalled that the DB portfolio liquidity study conducted by his investment team in 2020 was extremely effective in understanding the consequences of changing allocations between liquid and illiquid assets in their DB portfolio. The asset allocation framework that Cenland developed with their external partner helped link the DB portfolio's top-down asset allocation, bottom-up private asset investing, and liquidity demands together and provided an overall view of the portfolio's tradeoff between liquidity and performance.[23] "We should do a similar liquidity analysis on the UK DC fund to better understand the impact of the private assets there…," Dan thought. "Can we leverage the framework we developed for the DB plan? Or do we need a new tool for DC plans?" – Dan would leave

[19] E. Simon & J. Greenwood, "ESG in DC Pensions Report," Corporate Advisor Intelligence, February 2021.
[20] C. Choy *et al*. "Australian Superannuation Funds in Alternatives," Preqin, November 2018.
[21] N. Groom, "UK DC: A fetish for liquidity: The case for real assets," Natixis, July 2019.
[22] "A Whole New Investment Universe What's Holding UK DC Schemes Back from Investing in Private Markets?", DCIF, 2021.
[23] J. Shen *et al.* "Harnessing the Potential of Private Assets: A Framework For Institutional Portfolio Construction," PGIM IAS & GIC, June 2020.

it as a question for the investment team. "Well…no matter what tool they use, I need to design a fund structure for the new DC liquidity study." He started drawing up a schematic of a DC fund structure in his notebook (shown in Exhibit 4).

One step of the study involves identifying and analyzing the various liquidity demands that are unique to DC schemes. In normal times, inflows and outflows for DC plans are stable and predictable. However, during the pandemic, many governments allowed "early withdrawals" from DC accounts to support individuals experiencing financial hardship. For example, during one of their conversations, Oliver brought to Dan's attention that the Australian Federal Government allowed members to temporarily withdraw up to $10,000 from their superannuation funds between 20 April and 30 June 2020, and another $10,000 between 1 July and 31 December 2020.[24] The US government also allowed Coronavirus Related Distributions (CRDs) up to $100,000.[25] Dan knows that government policies have unintended consequences – these policies will be no exception.

Participants also have the option to move existing account assets from one plan investment option to another through a scheme called "member switching," which creates liquidity demands for fund managers. Other liquidity demands for fund managers may come from currency hedging losses when the domestic currency depreciates (Exhibit 5). In stressed market environments, these factors could contribute to a significantly greater amount of liquidity needed by DC funds to meet their cash withdrawals at a time when liquidity is less available.

Dan started strategizing about the upcoming meetings with his investment team on how to better understand and monitor the liquidity demands for the new DC plan, leveraging their experience with Cenland's DB and DC plans. Dan is expected to present an action plan to Denise at the year-end meeting. He would explain how he plans to manage the portfolios' liquidity risk, which becomes more challenging as Cenland further integrates illiquidity private assets into its DC portfolios. He would also identify potential opportunities for synergies across the US and UK plans, *e.g.,* by leveraging an integrated investment team. One thing he knows for sure is that they will have a packed schedule this fall.

[24] "Report no. 6: The COVID-19 early release of superannuation: Through a family lens: Families in Australia Survey," Australian Institute of Family Studies, September 2021, from https://aifs.gov.au/publications/covid-19-early-release-superannuation-through-family-lens
[25] "Defined Contribution Quarterly Q1: Retirement Policy in 2021," Goldman Sachs Asset Management, 2021.

Some Issues for Consideration

1. What are the distinctive characteristics of DC plans compared to DB plans?

2. What do the US and UK DC plans have in common? What are the key differences?

3. Would any government actions create new liquidity demands for the DC plans?

4. Globally, why can some DC plans invest more types and % of illiquid assets *vs.* others? Structural differences, regulatory environment, or participant preference?

5. What are the benefits/challenges of incorporating illiquid private assets into a DC plan?

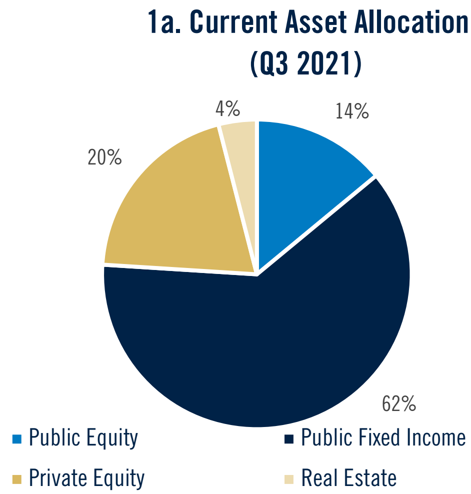
6. Is there any possibility to include private equity in the US/UK DC plans? How might Cenland get there?

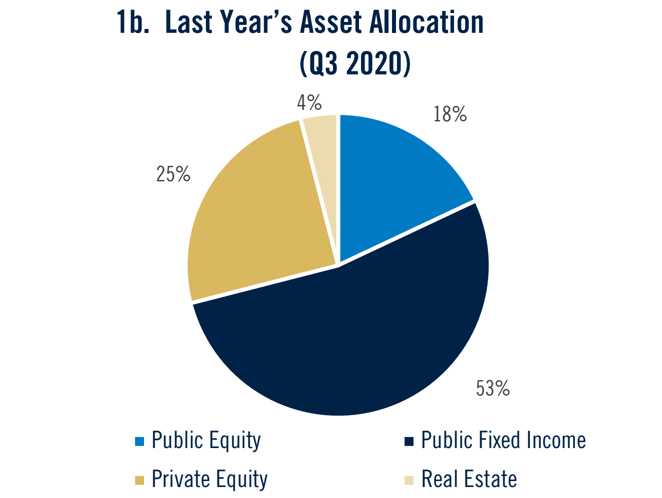
7. How should Dan interact with Oliver and his team?

8. How could Dan leverage his current investment team to manage the DC plans?

9. What should Cenland do with the frozen US DB plan to accelerate the termination?

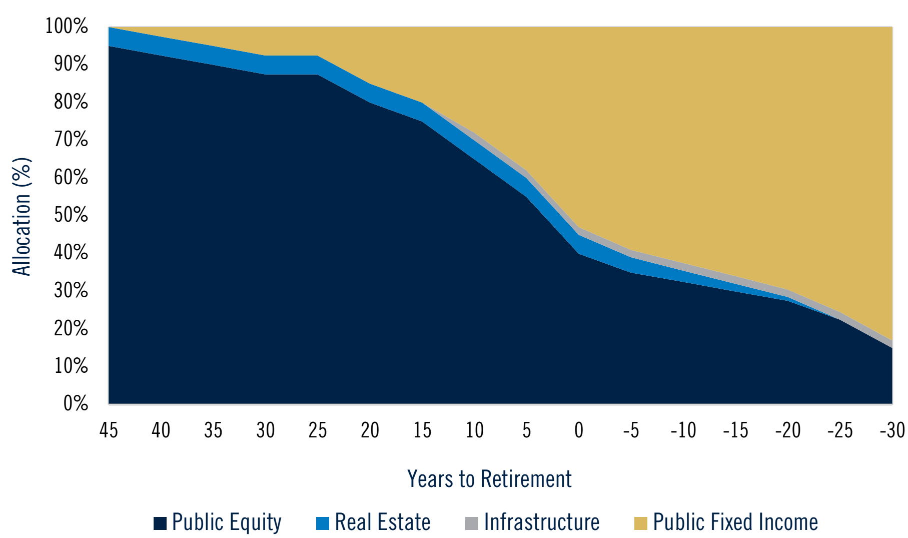
Exhibit 1
Asset Allocation of Cenland's US DB Fund





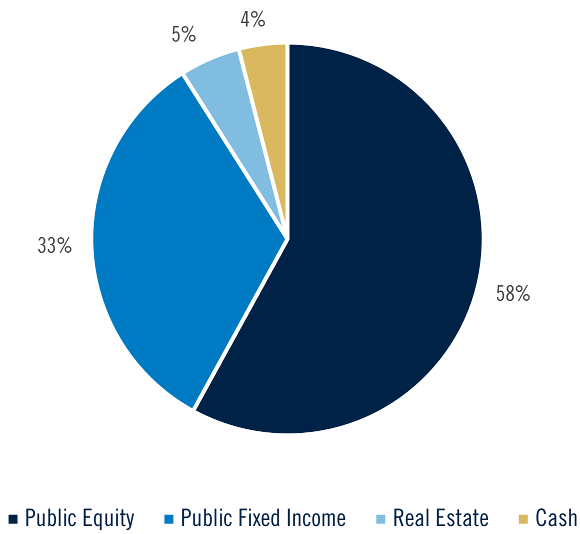
Source: PGIM IAS. Provided for illustrative purposes only.

Exhibit 2
Asset Allocation of Cenland's US Target Date Fund



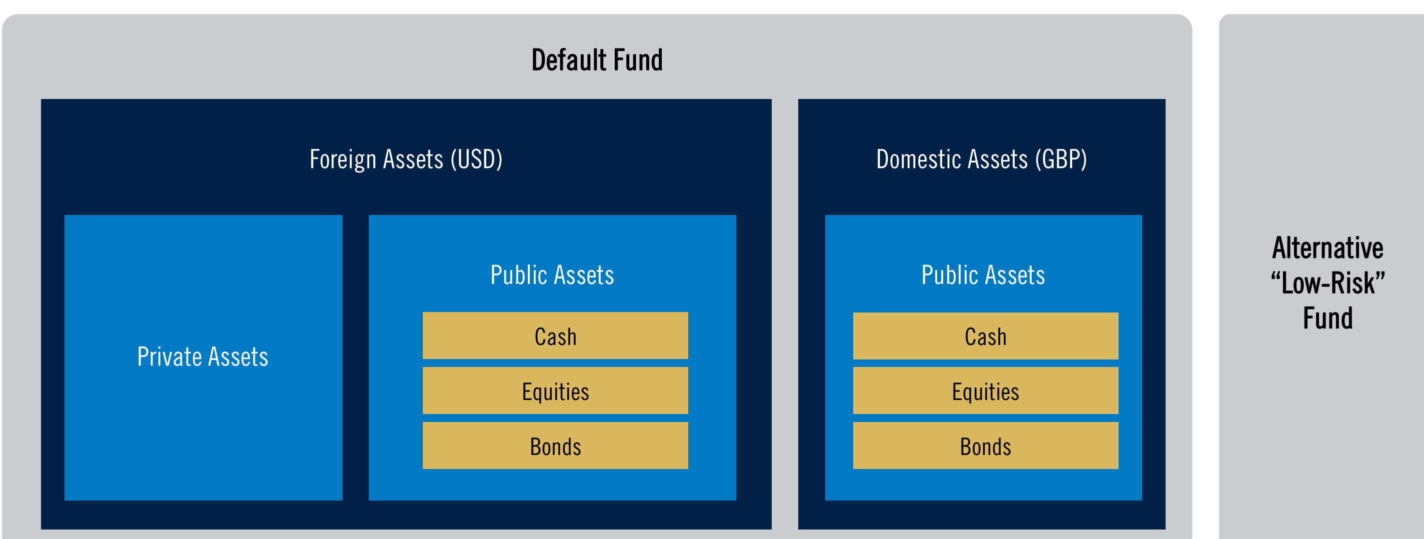
Source: PGIM IAS. Provided for illustrative purposes only.

Exhibit 3
Asset Allocation of Envision's UK DC Fund



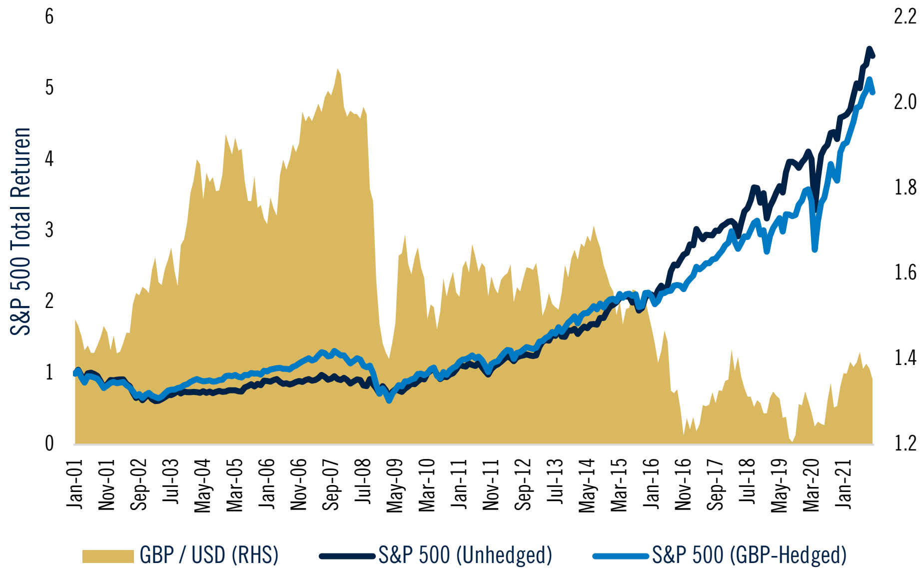
Source: PGIM IAS. Provided for illustrative purposes only.

Exhibit 4
Illustrative UK DC Fund Structure
(For New Cenland's DC Liquidity Study)



Source: PGIM IAS. Provided for illustrative purposes only.

Exhibit 5
S&P 500 Total Returns for a UK Investor
(Unhedged *vs.* Hedged)



Source: PGIM IAS, Refinitiv Eikon DataStream, Provided for illustrative purposes only.

Glossary

Closed DB Plan	When a defined benefit plan is closed it does not accept any new participants into the plan, but still provides ongoing accruals to participants who are already covered by the plan.
Frozen DB Plan	Apart from not accepting new entrants into the plan, a DB plan can be frozen in several different ways: • Soft freeze: the plan stops benefit accrual for all participants but allows benefits to increase with the growth of participants' wages • Partial freeze: the plan stops benefit accrual for some participants • Hard freeze: the plan stops service accruals for all participants, *i.e.*, the participants' benefits do not grow with additional years of service
PBO	Projected benefit obligation is an actuarial measurement of the present value of future pension liabilities that is a DB plan sponsor's responsibility.
PRT	Pension risk transfer typically refers to a transaction of transferring a defined benefit plan's risks from a pension plan sponsor to an insurance company through the purchase of an annuity contract.
401(k)	A company-sponsored retirement savings plan offered by many American employers. The employee can sign up for a 401(k) plan and agree to have a percentage of each paycheck contributed directly to an investment account before income taxes are deducted. The employer may match part or all of an employee's contributions. The employee is responsible for choosing specific investments from several options offered by the employer. When the account owner makes withdrawals, that money is taxed as ordinary earned income.
QDIA	Qualified Default Investment Alternative. When money is contributed to an employee's 401(k) plan, but the employee hasn't specified how the money should be invested among different investment options under the plan, the money can be automatically invested into the default QDIA.
TDF	Target-date fund that addresses an investor's capital needs at some future date. The asset allocation of a target-date fund is typically designed to become more conservative as the target-date approaches.
Master Trust	A Master Trust in the UK is a multi-employer occupational (DC) pension scheme. A Master Trust is typically set up by a provider, *e.g.,* an insurance company. Several non-associated employers can participate in the scheme under one Master Trust. Each participating employer can have one or more sections within the Master Trust. Trustees take governance and regulatory responsibilities, but each participating employer retains the ability to make decisions about benefit and contribution levels.

Michelle (Yu) Teng, PhD, CFA, CAIA
Vice President
Co-Head of IAS Private Assets Research Program
michelle.teng@pgim.com

Aili Chen, CFA
Senior Associate
aili.chen@pgim.com

MORE PUBLICATIONS FROM PGIM IAS

Publications

- A rising Private Asset Class: Core+ Real Estate Debt *(July 2021)*
- Harnessing the Potential of Private Assets: A Framework for Institutional Portfolio Construction *(June 2021)*
- US Stock–Bond Correlation: What Are the Macroeconomic Drivers? *(May 2021)*
- Equity Portfolio Manager Active Risk and Information Ratio: How Does the Reward Vary with Active Risk? *(November 2020)*
- Building and Maintaining a Desired Exposure to Private Markets: Commitment Pacing, Cash Flow Modeling, and Beyond *(November 2020)*
- Next-Generation Commodity Benchmarks: RASA Benchmarks Designed to Align with CIO Investment Objectives *(November 2020)*
- Modeling Private Investment Cash Flows with Market-Sensitive Periodic Growth *(October 2020)*
- Riders in the Storm: How Volatility Events Affect Private Asset Class Performance *(June 2020)*
- The Probability of Recession: A Critique of a New Forecasting Technique *(June 2020)*
- What's in Your Real Asset Portfolio? *(May 2020)*
- Measuring the Value of LP Fund-Selection Skill *(April 2020)*
- Building a Better Portfolio: Balancing Performance and Liquidity *(joint with the GIC – April 2020)*
- What is the Optimal Number of Equity Managers? – A CIO Toolkit for Manager Allocation *(February 2020)*
- Institutional Gold! *(November 2019)*
- A Fair Comparison Framework: Risk and Return in Private & Public Investments *(November 2019)*
- Asset Allocation for "End-State" Portfolios *(September 2019)*
- The Diversity of Real Assets: Portfolio Construction for Institutional Investors *(June 2019)*
- The Tradeoff Between Liquidity and Performance: Private Assets in Institutional Portfolios *(January 2019)*
- Emerging Market Equity Benchmarks for Japanese Investors: Countries, Sectors or Styles? *(October 2018)*
- Forecasting Long-Term Equity Returns: A Comparison of Popular Methodologies *(September 2018)*
- What Can the Markets Tell Us about Future Economic Growth? *(September 2018)*
- How to Measure the Value of Adding a Cross-Sector Manager *(September 2018)*
- Anchor to Windward: Aligning Absolute Return Objectives *(May 2018)*
- When the Dust Flies: How Volatility Events Affect Asset Class Performance *(April 2018)*
- Asset Allocation with Illiquid Private Assets *(February 2018)*
- The Impact of Market Conditions on Active Equity Management *(March 2017)*

Bespoke Client Projects

- How to design a commodity benchmark aligned with a DB plan's objective?
- Will my equity managers perform as expected in the next downturn?
- How should we allocate capital across our equity managers?

Case Studies

- Cenland Corporation—The CIO and the Freezing of the DB Plan *(December 2020)*
- Cenland Corporation—The CIO and the Closing of the DB Plan *(December 2019)*

Research Collections

- IAS Research Collection 2019 (December 2019)

The IAS Differential

- March 2021
- July 2021

→ Visit us at pgim.com/IAS

Important Information

Past performance is no guarantee or reliable indicator of future results. All investments involve risk, including the possible loss of capital. These materials are for informational or educational purposes only. In providing these materials, PGIM is not acting as your fiduciary.

Alternative investments are speculative, typically highly illiquid and include a high degree of risk. Investors could lose all or a substantial amount of their investment. Alternative investments are suitable only for long-term investors willing to forego liquidity and put capital at risk for an indefinite period of time. Equities may decline in value due to both real and perceived general market, economic and industry conditions. Investing in the bond market is subject to risks, including market, interest rate, issuer, credit, inflation risk and liquidity risk. Commodities contain heightened risk, including market, political, regulatory and natural conditions and may not be suitable for all investors. The use of models to evaluate securities or securities markets based on certain assumptions concerning the interplay of market factors, may not adequately take into account certain factors and may result in a decline in the value of an investment, which could be substantial.

The analysis in the paper is based on hypothetical modeling. There is no guarantee, and no representation is being made, that an investor will or is likely to achieve profits, losses or results similar to those shown. Hypothetical or simulated performance results are provided for illustrative purposes only and have several inherent limitations. Unlike an actual performance record, simulated results do not represent actual performance and are generally prepared through the retroactive application of a model designed with the benefit of hindsight. There are frequently sharp differences between simulated results and actual results. In addition, since trades have not actually been executed, simulated results cannot account for the impact of certain market risks such as lack of liquidity. There are several other factors related to the markets in general or the implementation of any specific investment strategy, which cannot be fully accounted for in the preparation of simulated results and all of which can adversely affect actual results.

All charts contained herein were created as of the date of this presentation, unless otherwise noted. Performance results for certain charts and graphs may be limited by date ranges, as stated on the charts and graphs. Different time periods may produce different results. Charts and figures are provided for illustrative purposes and are not an indication of past or future performance of any PGIM product.

These materials represent the views, opinions and recommendations of the author(s) regarding the economic conditions, asset classes, securities, issuers or financial instruments referenced herein, and are subject to change without notice. Certain information contained herein has been obtained from sources that PGIM believes to be reliable; however, PGIM cannot guarantee the accuracy of such information, assure its completeness, or warrant such information will not be changed. The information contained herein is current as of the date of issuance (or such earlier date as referenced herein) and is subject to change without notice. PGIM has no obligation to update any or all of such information; nor do we make any express or implied warranties or representations as to the completeness or accuracy or accept responsibility for errors. Any forecasts, estimates and certain information contained herein are based upon proprietary research and should not be considered as investment advice or a recommendation of any particular security, strategy or investment product. These materials are not intended as an offer or solicitation with respect to the purchase or sale of any security or other financial instrument or any investment management services and should not be used as the basis for any investment decision. No liability whatsoever is accepted for any loss (whether direct, indirect, or consequential) that may arise from any use of the information contained in or derived from this report. PGIM and its affiliates may make investment decisions that are inconsistent with the recommendations or views expressed herein, including for proprietary accounts of PGIM or its affiliates. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients or prospects. No determination has been made regarding the suitability of any securities, financial instruments or strategies for particular clients or prospects. For any securities or financial instruments mentioned herein, the recipient(s) of this report must make its own independent decisions.

The information contained herein is provided by PGIM, Inc., the principal asset management business of Prudential Financial, Inc. (PFI), and an investment adviser registered with the US Securities and Exchange Commission. PFI is not affiliated in any manner with Prudential plc, a company incorporated in the United Kingdom. In the United Kingdom and various European Economic Area ("EEA") jurisdictions, information is issued by PGIM Limited with registered office: Grand Buildings, 1-3 Strand, Trafalgar Square, London, WC2N 5HR. PGIM Limited is authorised and regulated by the Financial Conduct Authority of the United Kingdom (Firm Reference Number 193418) and duly passported in various jurisdictions in the EEA. These materials are issued by PGIM Limited to persons who are professional clients or eligible counterparties for the purposes of the Financial Conduct Authority's Conduct of Business Sourcebook. In certain countries in Asia, information is presented by PGIM (Singapore) Pte. Ltd., a Singapore investment manager registered with and licensed by the Monetary Authority of Singapore. In Japan, information is presented by PGIM Japan Co. Ltd., registered investment adviser with the Japanese Financial Services Agency. In South Korea, information is presented by PGIM, Inc., which is licensed to provide discretionary investment management services directly to South Korean investors. In Hong Kong, information is presented by representatives of PGIM (Hong Kong) Limited, a regulated entity with the Securities and Futures Commission in Hong Kong to professional investors as defined in Part 1 of Schedule 1 of the Securities and Futures Ordinance. In Australia, this information is presented by PGIM (Australia) Pty Ltd. ("PGIM Australia") for the general information of its "wholesale" customers (as defined in the Corporations Act 2001). PGIM Australia is a representative of PGIM Limited, which is exempt from the requirement to hold an Australian Financial Services License under the Australian Corporations Act 2001 in respect of financial services. PGIM Limited is exempt by virtue of its regulation by the Financial Conduct Authority (Reg: 193418) under the laws of the United Kingdom and the application of ASIC Class Order 03/1099. The laws of the United Kingdom differ from Australian laws. Pursuant to the international adviser registration exemption in National Instrument 31-103, PGIM, Inc. is informing you of that: (1) PGIM, Inc. is not registered in Canada and relies upon an exemption from the adviser registration requirement under National Instrument 31-103; (2) PGIM, Inc.'s jurisdiction of residence is New Jersey, U.S.A.; (3) there may be difficulty enforcing legal rights against PGIM, Inc. because it is resident outside of Canada and all or substantially all of its assets may be situated outside of Canada; and (4) the name and address of the agent for service of process of PGIM, Inc. in the applicable Provinces of Canada are as follows: in Québec: Borden Ladner Gervais LLP, 1000 de La Gauchetière Street West, Suite 900 Montréal, QC H3B 5H4; in British Columbia: Borden Ladner Gervais LLP, 1200 Waterfront Centre, 200 Burrard Street, Vancouver, BC V7X 1T2; in Ontario: Borden Ladner Gervais LLP, 22 Adelaide Street West, Suite 3400, Toronto, ON M5H 4E3; in Nova Scotia: Cox & Palmer, Q.C., 1100 Purdy's Wharf Tower One, 1959 Upper Water Street, P.O. Box 2380 - Stn Central RPO, Halifax, NS B3J 3E5; in Alberta: Borden Ladner Gervais LLP, 530 Third Avenue S.W., Calgary, AB T2P R3.

IAS 1130-600

For inquiries and to learn more about PGIM's investment advisory capabilities, email IAS@pgim.com.

Learn more at pgim.com/IAS