The Benefits of Global Listed Infrastructure for Public Safety Plans
October 3, 2017

Presented by: John L. Creswell, CPA
Executive Managing Director
Real, long-lived assets vital to society’s ability to function and grow

Companies that provide the public with essential services that are a part of everyday life

Industry attributes:
- High barriers to entry
- Inelastic price demand
- Long-term regulated contracts
- Inflation protection
- Public/Private globally diversified assets
# Investment Strategies – Listed vs. Private

<table>
<thead>
<tr>
<th></th>
<th>Listed</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diversification</strong></td>
<td>High – portfolio may invest across multiple sub-sectors and countries</td>
<td>Low – active investment in a few projects</td>
</tr>
<tr>
<td><strong>Liquidity</strong></td>
<td>Highly liquid, increased portfolio flexibility, Beta to public markets</td>
<td>Mostly illiquid, requires lock-up periods, other factor risks</td>
</tr>
<tr>
<td><strong>Transparency</strong></td>
<td>Securities are priced daily on listed exchanges; government and regulatory oversight</td>
<td>3rd party valuation services are required; lack of external governance and oversight</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td>Low to Moderate</td>
<td>Moderate to High</td>
</tr>
<tr>
<td><strong>Pre-investment timeframe</strong></td>
<td>Minimal time required to come up to speed on the infrastructure asset class</td>
<td>Assuming team in place, could take years to find the “right” assets to invest in</td>
</tr>
</tbody>
</table>

Source: Duff & Phelps and Global Listed Infrastructure Organisation (GLIO).
Infrastructure, Equities & Bonds (12 Years)

Cumulative returns include the reinvestment of income. Indices are not available for direct investment.
Benefits of Listed Infrastructure

- High risk-adjusted returns
- Regulated contracts cut out income fluctuations
- Consistent cash flows and company earnings
- Liquidity versus direct investment
- Contracts index-lined - Inflation hedge
- Vital economic functions – monopolistic in some cases
- Essential services that are resilient to downturns
- Assets require high level of capital to manage, maintain and develop – why own directly?
- Global opportunity set is approximately $2Trn Mkt Cap

Source: Duff & Phelps and Global Listed Infrastructure Organisation (GLIO).
$49 Trillion Required by 2030 in G20

Average annual need, 2016–30, in constant 2015 dollars, $ trillion

- Ports: 0.9
- Airports: 1.3
- Rail: 5.1
- Water: 7.5
- Telecom: 8.3
- Roads: 11.4
- Power: 14.7

Total: $49.1 trillion, 3.8% of GDP

Source: Global Listed Infrastructure Organisation (GLIO), McKinsey Global Institute, 2016
Allocations Increasing to Infrastructure
PREQIN: Investment Plans Survey 2016

Fig. 2.9: Institutional Investors’ Plans for the Coming Year
Invest Less Capital than Previous 12 Months ▼
- 11% PRIVATE EQUITY
- 11% PRIVATE DEBT
- 25% REAL ESTATE
- 12% INFRASTRUCTURE
- 22% NATURAL RESOURCES

Invest More Capital than Previous 12 Months ▲
- 40%
- 57%
- 24%
- 38% (Net +26%)
- 26%

Fig. 2.10: Institutional Investors’ Plans for Allocations in the Longer Term
Reduce Allocation ▼
- 6% PRIVATE EQUITY
- 8% PRIVATE DEBT
- 10% REAL ESTATE
- 11% INFRASTRUCTURE
- 23% NATURAL RESOURCES

Increase Allocation ▲
- 48%
- 62%
- 36%
- 53% (Net +42%)
- 19%

Source: Global Listed Infrastructure Organisation (GLIO).
Listed Infrastructure universe is growing
Growing in size to a market of US $2 trillion
Improving diversification and quality

Global Listed Infrastructure Market Cap
1989-2017

Global Listed Infrastructure Subsectors¹
As of June 30, 2017

Source: Global Listed Infrastructure Organisation (GLIO). 1) FTSE Global Core Infrastructure 50/50 index sectors.
Most infrastructure assets can increase prices with inflation
Listed infrastructure has delivered returns greater than CPI + 5% through the cycle
Listed infrastructure has tended to outperform equities when CPI is higher

Source: eVestment. Infrastructure represented by the MSCI World Infrastructure Capped-ND from June 2002 to December 2009 and FTSE Global Core Infrastructure 50/50 since January 2010. Cumulative returns are in U.S. dollars and include the reinvestment of income. Indices are not available for direct investment.

¹As measured for the annual periods from 1999 through 2016 when the CPI is above 2%.
Global listed infrastructure has delivered higher returns with lower risk

Over the long term the sector has provided ~75% of the upside in rising global equity markets but ~60% of the downside in falling markets

Source: eVestment, Duff & Phelps. Infrastructure represented by the MSCI World Infrastructure Capped-ND from June 2007 to December 2009 and the FTSE Global Core Infrastructure 50/50 index since January 2010. Additional asset classes represented by the following indices: Bonds – Bloomberg Barclays U.S. Aggregate; U.S. Equities – S&P 500; World Equities – MSCI World; Real Estate – FTSE EPRA/NAREIT Developed; Commodities – MSCI World Commodity Producers. Cumulative returns are in U.S. dollars and include the reinvestment of income. Indices are not available for direct investment.
Blending Listed & Unlisted Infrastructure

Mean-Variance Optimised Portfolios

Source: Global Listed Infrastructure Organisation (GLIO).
An Evolving Asset Class Needs Active Management

- Politics and regulation
- Interest rates
- Equity markets
- Valuations
- Sustaining the license to operate
- Real or nominal, leverage
- Investment horizon, drawdown limits
- Mispricing evident by sector vs. unlisted

Source: Duff & Phelps, Global Listed Infrastructure Organisation (GLIO).
### Not All Indices Are Created Equally

<table>
<thead>
<tr>
<th>Managed Weightings</th>
<th>FTSE Global Core Infrastructure 50/50 Index</th>
<th>Dow Jones Brookfield Global Infrastructure Index</th>
<th>S&amp;P Global Infrastructure Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes, 50% utilities, 30% transportation, and 20% other infrastructure (telecom and pipelines)</td>
<td>No</td>
<td>Yes, 40% utilities, 40% transportation infrastructure, 20% pipelines</td>
</tr>
<tr>
<td>Sub-Sector Allocations</td>
<td>Only index to include freight rails – most managers now include freight rails in their portfolios</td>
<td>Excludes utilities with any generation assets, even if fully regulated (yet has some commodity exposure through significant pipeline weighting)</td>
<td>No communications infrastructure, large pipelines weighting; material weighting in non-infrastructure transport logistics companies</td>
</tr>
<tr>
<td>Geographic Diversification</td>
<td>Diversified; modest emerging markets allocation</td>
<td>Heavy focus on North America with a very modest exposure to Asia and continental Europe, small emerging markets exposure</td>
<td>Diversified modest emerging markets allocation</td>
</tr>
</tbody>
</table>

As of June 30, 2017.
## Top 10 Names in FTSE Global Core Infrastructure 50/50 Index

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Country</th>
<th>ICB Subsector</th>
<th>Index Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enbridge</td>
<td>Canada</td>
<td>Pipelines</td>
<td>3.7</td>
</tr>
<tr>
<td>American Tower Corp</td>
<td>USA</td>
<td>Specialty REITs</td>
<td>3.2</td>
</tr>
<tr>
<td>Transurban Group</td>
<td>Australia</td>
<td>Transportation Services</td>
<td>3.1</td>
</tr>
<tr>
<td>NextEra Energy Inc</td>
<td>USA</td>
<td>Conventional Electricity</td>
<td>3.0</td>
</tr>
<tr>
<td>Duke Energy Corp</td>
<td>USA</td>
<td>Multi-utilities</td>
<td>2.7</td>
</tr>
<tr>
<td>Atlantia</td>
<td>Italy</td>
<td>Transportation Services</td>
<td>2.5</td>
</tr>
<tr>
<td>TransCanada</td>
<td>Canada</td>
<td>Pipelines</td>
<td>2.3</td>
</tr>
<tr>
<td>Dominion Energy</td>
<td>USA</td>
<td>Conventional Electricity</td>
<td>2.2</td>
</tr>
<tr>
<td>Southern Co</td>
<td>USA</td>
<td>Conventional Electricity</td>
<td>2.2</td>
</tr>
<tr>
<td>Kinder Morgan</td>
<td>USA</td>
<td>Pipelines</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td><strong>26.9</strong></td>
</tr>
</tbody>
</table>

Source: FTSE.  
As of June 30, 2017.
Current State of Public Safety Plans

According to the 2016 NCPERS Public Employee Retirement Systems Study:

- Funded status is on the rise from 74.1% on average in 2015 to 76.2% in 2016
- Funds are currently experiencing healthy 3 and 5 year returns
- 73.8% of Pension income is funded from Investment returns
- The average investment assumption for funds is 7.5% (and coming down)
- Funds are overweight domestic equity
- Top themes going forward were: 1. Real assets, 2. TIPS, 3. Opportunistic investments, and 4. Master Limited Partnerships (MLP).

“We use the listed companies to gain exposure to infrastructure. We like the transparency and liquidity of the listed companies, but moreover, we are looking at gaining exposure to well managed high-quality underlying infrastructure assets.”

Large European Pension Fund

Source: Global Listed Infrastructure Organisation (GLIO).