Water Supply Project (WSP)
Eastern and Midlands Region

Briefing:

The Institution of Structural Engineers
ROI Branch

8th March 2016
Water Supply Project – Eastern and Midlands Region (WSP)
Overall Summary

- WSP in ‘Planning’ Phase – Direct Application to An Bord Pleanála
- Planning Process involves No of Public Consultations
  - 1st – Need (Q1, 2015)
  - 2nd – Options (Q2, 2015)
  - 3rd – Emerging Preferred Option & Pipeline Route Corridor (Nov 2015 to Feb 2016)
  - 4th – Final Option + Scoping EIA / EIS – June 2016
- Submit ‘Planning Application’ (An Bord Pleanala) Q3, 2017
- Oral Hearing Q1 / Q2, 2018
- Procurement / Construction / Commissioning 2018 – 2022
Project Need
Demand (2050) = 215Mld (Eastern) + 99Mld (Midlands) + 16Mld (Process)
Total = 330Mld = 4 cubic metres per second / Review End 2016
Project Need (2015 – 2050)

- **Irish Water** – Project Need Report

- Three Supporting ‘**Independent**’ Reports (Appendices)
  - App A – Demographic Report (AOS Planning)
  - App B – Economist Report (Indecon)
  - App C – Water Demand Review (Jacobs-Tobin Water Engineers)
Demographic Report (AOS Planning)

- Population Projections (Aligned with CSO / ESRI):

<table>
<thead>
<tr>
<th>Area No</th>
<th>Description</th>
<th>2011 Census</th>
<th>2050 Most Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water Supply Area (Dublin)</td>
<td>1,516,133</td>
<td>2,154,252</td>
</tr>
<tr>
<td>2</td>
<td>Benefiting Corridor</td>
<td>533,984</td>
<td>692,296</td>
</tr>
<tr>
<td>3</td>
<td>Rest of the State</td>
<td>2,538,135</td>
<td>2,920,852</td>
</tr>
<tr>
<td></td>
<td>Total State Population</td>
<td>4,588,252</td>
<td>5,767,400</td>
</tr>
</tbody>
</table>
Key Data – Project Need Report (2015 – 2050)

- **Domestic** (70Mld)
  - Population Growth 1.5m – 2.1m
  - PCC 125 litres / person / day (5% Reduction – Water Conservation)

- **Non Dom** (55Mld) + Strategic Provision (100Mld) / IDA (FDI)

- **Leakage** Network (48Mld reduction) – Mid to High 30% to Mid to Low 20% + Household

- **Operational Requirements** (International Standards)
  - 20% - Peaks (90Mld) / 15% - Headroom (70Mld)
  - Avoids Outages (€78m per day) / Provides for Climate Change Impacts

- **Resilience** (IDA) / Diversification of Source (Failure) Risk

- **Benefiting Corridor** (99Mld)
  - Population Growth / Non Dom / FDI / Tourism / WTP Rationalisation (EPA)
Water Requirement

- Dublin Water Supply Area: 215 Mld
- Benefiting Corridor: 99 Mld
- Total Water Demand: 314 Mld
- Treatment Process Usage: 16 Mld
- Overall Requirement: 330 Mld
Summary – New Supply Need / Timing / Extent

**Population Increases**

Industrial / Commercial & FDI

**Water Conservation / Leakage**

Metering & Charging

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PEAK DEMAND</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>540Mld – 565Mld</td>
</tr>
<tr>
<td>2020’s</td>
<td>600Mld – 620Mld</td>
</tr>
<tr>
<td>2050’s</td>
<td>800Mld – 900Mld</td>
</tr>
</tbody>
</table>

Maximise Sustainable Production Existing Sources

Minimise Demand – Metering / New Appliances / Water Con / UFW Reduce

Plan Now for New Supply **330Mld @ 2050** (approx 4m³/sec)

- Operate to International Service Standards
- Enhance Resilience of Overall Supply System (FDI etc)
- Benefiting Area (99Mld included in 330Mld)
Options

Emerging Preferred Option (Water Abstraction)
Least Constrained Pipeline Route Corridor
SEA Options (10 No Considered 2007 - 2011)

Legend
- Water Treatment Plant
- A-Lough Ree
- B-Lough Derg
- C-Pantine Basin
- D-Lough Ree & Storage
- E-Lough Ree & Storage Options
- F-Lough Derg & Storage Options
- G-Impoundment - Lough Ree [Derg]
- H-Desalination
- I-Fingal / Kildare Groundwater
- J-Liffey / Barrow
Dublin City Council (2011) – 4 No Technically Viable Options
Multi-Criteria Analysis of Options

Multi-Criteria Analysis on 4 No Technically Viable Options (2014-2015)

- Technical
- Environmental
  - Social
  - Socio-Economic
  - Sustainability
- Economic
- Risk
• Parteen Basin is Irish Water’s ‘Emerging Preferred Option’
• Desalination ranked (distant) 2\textsuperscript{nd}
• NE Lough Derg Direct & Storage Garryhinch* (no further consideration)
Emerging Preferred Option – Parteen Basin / Lower Lake

Lough Derg

Killaloe/ Ballina

Parteen Weir

Ardnacrusha Headrace

‘Old’ Shannon River
Pipeline Route Corridors / Least Constrained Corridor
Water Flows, Water Levels & Storage
(Emerging Preferred Option)
Parteen Basin & Weir – Approx. Range of Inflows & Outflows

Outflows not ‘Directly’ linked to Inflows – Outflows from ‘Storage’

1 cumec = 1 cubic metre per second

Typical Inflow Range
10 – 1000 cumec

Min 10 cumec (Statutory)
400 cumec – Max Power Generation

Flood 600 (1000) cumec
Parteen Weir – Average Flows (Approx.)

Average Flow $\approx 180$ cumec

$\approx 95\%$ of Flow

$\approx 5\%$ of Flow

Average $\approx 170$ cumec

Minimum 10 cumec
Parteen Weir – Average Flows (Approx.) Abstraction in Place

Average Flow ≈ 176 cumec

≈ 93% of Flow

≈ 5% of Flow

Average ≈ 166 cumec

BUT

Same Flow Rate with Reduced Duration (≈2%)

Minimum 10 cumec

Abstraction 4 cumec (≈ 2%)
Abstraction Impact on Water Level Range

Abstraction Impacts on Water Levels in *High Flow & Low Flow Conditions* always *Inside* Operating / Storage Band – Enabled by *Reduced Generation* and / or *Storage*

<table>
<thead>
<tr>
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<th>Operating / Storage Band</th>
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<tbody>
<tr>
<td>Lough Derg</td>
<td>460mm (18 inches)</td>
</tr>
<tr>
<td>Parteen Basin</td>
<td>1400mm (56 inches)</td>
</tr>
</tbody>
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Public Consultation
Public Consultation(s) - Stakeholder Action Plan(s)

- Stakeholder Action Plan (Who / How / When / What)
  - Statutory Stakeholders (ESB, Waterways Ireland, National Parks and Wildlife Service, Environmental Protection Agency, Inland Fisheries Ireland, Local Authorities – Clare, Tipperary, Limerick, Offaly, Laois, Kildare / Dublin etc.)
  - Non-Statutory Stakeholders (Angler’s Associations & Clubs / Inland Waterways Association of Ireland (IWAI) / River Shannon Protection Alliance (RSPA) / Farming Bodies / Lough Derg Science Group(LDSG) / Environmental NGOs – ELIG & SWAN / An Taisce / IW Stakeholder Forum / Chambers of Commerce / IBEC etc.)
  - Landowners
  - Elected Representatives
  - Media & the General Public (Open Days)
Community Gain
Community Gain (1)

- Strategic Infrastructure Act – Direct Application to An Bord Pleanála
  - ABP may specify Community Gain Conditions
  - Preference that ‘Applicant’ includes proposals

- Irish Water’s proposed Approach to Community Gain (Section 10)
  - Engage Stakeholders re ‘Meaningful’ & ‘Proportionate’ Proposals
  - Establish Fund

- Secure & Sustainable Water Supplies
  - Construction Jobs / Permanent & Contract Jobs
  - Data & Scientific Research / Water Framework Directive (WFD) Centre

- Support for Community Initiatives (Typically)
  - Tourism / Environmental
  - Sport & Leisure / Training & Education
Summary
Summary

- June 2016 – Publish Final Preferred Option / Draft Scope of EIS
- July 2016 to July 2017 – Undertake EIS
- Feb 2016 to Feb 2017 – Engage with Farming Bodies / Landowners
- Q1 / Q2 2017 – Conclude Agreements with ESB / WI / IFI etc
- Q3 2017 – Submit Planning Application to ABP
- Q4 2017 – ABP consult Stakeholders (Local Authorities etc.)
- Q1 / Q2 2018 – Oral Hearing & Decision
- Procurement / Construction / Commissioning 2018 – 2022