

# City of Ottawa

## Review of Urbandale Rapid Transit Proposal

SUMMARY REPORT



Ottawa



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**(Separate Documents)**

**ANNEX A – Exhibits 1-7 & Schedule**

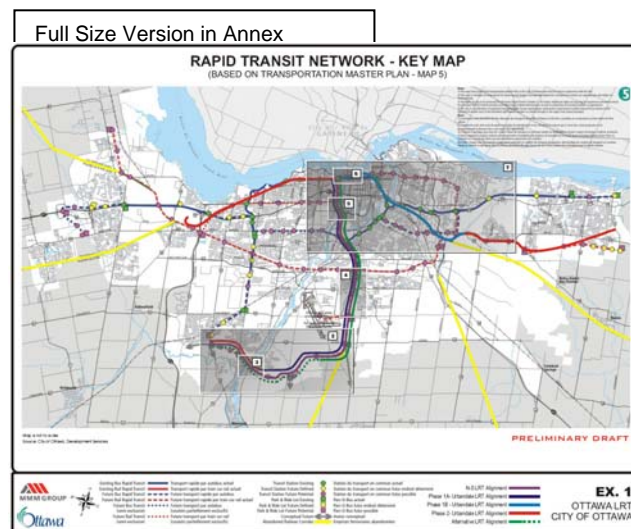
**ANNEX B – Urbandale LRT System Proposal Materials**

**ANNEX C – Review of Urbandale Rapid Transit Proposal  
– Detailed Report**

### 1. Assignment

The City of Ottawa retained the MMM Group to carry out a technical review of the proposal “An Affordable Solution for Rapid Transit in Ottawa” dated August 2007 (“Urbandale proposal”), to compare it with the former N-S LRT project and to review the feasibility of the implementation of Phase 1 of the Urbandale proposal, together with any suggested improvements. This is one of a number of reports that will support the staff response to the City Council motion requesting that staff review the proposal from Urbandale and report back to a joint meeting of Transportation and Transit Committees on:

- a. The appropriateness of the corridors;
- b. Recommendations on modifications of the corridors including expansion to Kanata and across the Strandherd Bridge to Barrhaven Town Centre (TC); and
- c. A timetable to undertake any additional or modification studies to implement such a network.



### 2. Conclusion

Based on the analysis in this report, it is concluded that the basic technical concept within the Urbandale proposal has some merit, but detailed studies are required in order to verify and quantify the engineering elements of the Urbandale proposal and the preliminary recommendations of this report. The conclusions with respect to the assignment are:

- a. Appropriateness of Corridors:
  - o Downtown Core – Urbandale proposes a tunnel whereas the former N-S LRT project was to have the LRT running on the surface along Albert and Slater Streets (in a shared reserved transit lane with buses). A tunnel has potential advantages with respect to improved reliability of LRT operation, reduced traffic impact and reduced construction/utility relocation impacts on existing downtown streets. An Environmental Assessment is needed to determine the viability of a tunnel and to identify the preferred tunnel alignment, location of portals and station locations.
  - o Across LeBreton Flats, the Urbandale proposal calls for the LRT to be in a “trench”, with a major hub station at Bayview Station, located at the extreme west end of LeBreton Flats. No provision is made for any other LRT station in LeBreton Flats. A station at LeBreton Flats should be maintained to support the notion of transit-oriented development as envisioned by the NCC and the City for this area.
  - o Bayview Station to the intersection with Earl Armstrong Road southwest of the Maintenance Centre (MC) - The Urbandale Phase 1A alignment is the same as the former N-S LRT alignment.
  - o Intersection with Earl Armstrong Road southwest of the Maintenance Centre (MC) to River Road Station (Riverside South) - Urbandale’s Phase 1A corridor would be located along the centre median of Earl Armstrong Road. The alignment set out in the former N-S LRT project took a route south of Earl Armstrong Road through the planned Town Centre and higher density sections of the Riverside South community, where land uses are planned to take advantage of and support the LRT. The Urbandale alignment would not be integrated with nor support the community development plan, and therefore would not service the needs of the community as addressed in the Riverside South Community Design Plan.
  - o River Road Station to Barrhaven Town Centre – The Urbandale Phase 2 alignment is the same as the former N-S alignment.
- b. Modifications of Corridors:
  - o The extension to Barrhaven Town Centre is identical in both the Urbandale proposal and the former N-S LRT project, except that the Urbandale proposal would delay implementation until a later Phase. The former N-S LRT project included the extension to Barrhaven TC as part of the initial implementation.
  - o Expansion to Kanata and to Cumberland was not part of the scope of the MMM review (it is discussed in a separate report prepared by another consulting firm for the City)

c. Timetable for studies:

- Further studies listed below are required in order to prepare the business case for a revised north-south LRT line as a first phase of a comprehensive citywide LRT system. More details are described later within the attachments to this report.
  - Undertake simulation studies of the alternatives presented to ensure that the assumptions are valid;
  - Undertake ridership studies based on the revised set of alternatives;
  - Undertake a detailed cost estimate and value engineering exercise for the identified alternatives;
  - Undertake analysis to verify that there is sufficient interm capacity on the downtown street network to accommodate bus service during the interim period of operation when Bayview is the northern terminus point of the LRT system where LRT riders would transfer to/from buses to go downtown.
  - Prepare and compare the business case for each of the alternatives;
  - Coordinate the review exercise with the ongoing update of the TMP and the Official Plan;
  - Determine the financial and schedule feasibility of a revised project; and
  - Undertake the Environmental Assessment Study for the Downtown Tunnel and affected areas.
- At a minimum approximately 6 months would be required to carry out most of these studies, (with the exception of the Tunnel EA study which would take longer due to its complexity).

### 3. Background

Light Rail Transit (LRT) is an integral part of the City of Ottawa's Transportation Master Plan (TMP). Within the Plan, LRT service to downtown is fundamental and was projected to be implemented as part of the first stage of the LRT network. Providing high quality transit service to the developing south urban communities was also identified by Council as one of the first priorities for implementation. Subsequent network expansion stages were planned to service the East and West portions of the City.

Many solutions to access the downtown core have been investigated, including tunnels. In the 1980's, the former Regional Municipality of Ottawa-Carleton considered a bus tunnel across the downtown core as part of the then new Transitway facility. At the time, the cost of the bus tunnel was seen to be prohibitive and the project did not proceed. During the Environmental Assessment for the former N-S LRT project, a downtown tunnel was also investigated. The surface option was carried forward, along with the recommendation that provision for a transit tunnel be protected for future development, if and when appropriate ridership levels are reached and funds are available.

The former N-S LRT project was released to a RFQ issued in April 2005, followed by a RFP tender process issued in August 2005, for implementation through a design, build and maintain (15 year) contract. This process concluded with Council approving a contract award to a Special Purpose Consortium (Ottawa Light Rail Corporation (OLC)) in July 2006. Due to the non-fulfillment of certain conditions, the Project Agreement was terminated in accordance with its terms in December 2006.

On August 15, 2007 the City received an unsolicited proposal from the Urbandale Corporation for a reconfigured solution to LRT for the City of Ottawa. The intent of the proposal was to re-initiate an LRT-based rapid transit system due to Urbandale's "...commitment to the transit oriented design of Riverside South and a concern for improvements to transit in both the East and in the West."

## 4. Urbandale Proposal

The Urbandale proposal shown to the right includes the following key elements, which are illustrated in more detail in Annex A, Exhibits 1-7 appended to this Summary Report:

### Phase 1A

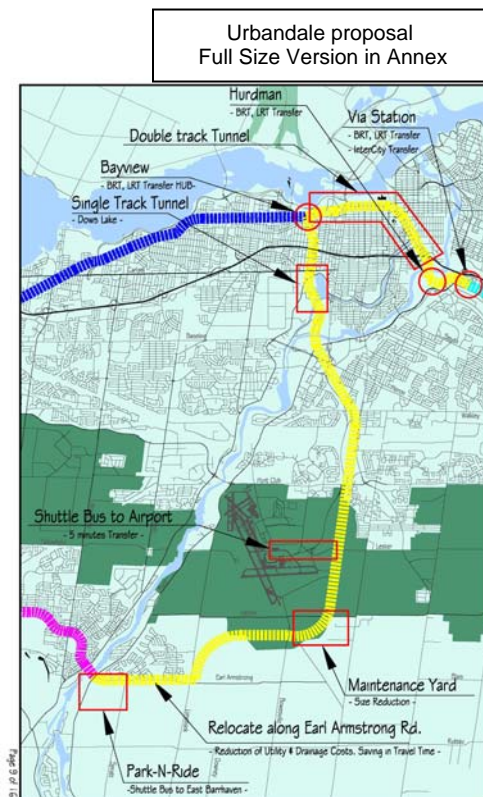
- Connect River Road and Bayview stations (Ex.1);
- From River Road to east of Mosquito Creek, move the LRT alignment from within the Town Centre of the Riverside South community to follow Earl Armstrong Road (Ex.2 and 3);
- Reduce the size of the Maintenance Centre (MC) (Ex.2);
- Delete Greenboro Station (Ex.4);
- Dow's Lake Tunnel to remain as a single track with signal-controlled two-way operation (Ex.5); and
- Bayview Station to be a system hub (Ex.6).

### Phase 1B

- Extend across LeBreton Flats without a LeBreton Station (Ex.7);
- The LRT to run in a tunnel across the downtown core area. The tunnel to extend to south of the University of Ottawa (Ex.7);
- Provide a transfer station at Hurdman (Ex.7); and
- Terminate at the VIA Train station (Ex.7);

### Phase 2

- Extend west to Barrhaven TC when passenger demand increases (Ex.2); and,
- Extend to the East and to the West.



## 5. Preliminary Recommendations

If the decision is made to consider activating an LRT project, then it is recommended that studies listed in Clause 2C of the Conclusion above, be completed to validate the assumptions made in this report; with the objective of recommending a phased solution for the LRT that allows a first phase to be operational as early as possible, while other phases such as those serving the downtown and extensions to the East and West continue through the planning process for implementation as quickly as feasible.

In order to assist with budget allocations the foregoing follow-up studies could present options for the following items based on co-ordination with the TMP and an assessment of value for money:

- Determine the southern terminus point of the first phase of implementation. These would include Bowesville, River Road or Barrhaven Town Centre;
- Phasing of the link to the Airport;
- Second tunnel to provide two tracks and two-way operation at Dow's Lake; and
- Size of the Maintenance Centre and whether it should be included in the original capital cost or financed over the term of the maintenance agreement.

## 6. Technical Comparison

The “Alternative” set out in the table below is a suggested modification based on the former N-S LRT project and the Urbandale proposal. It is proposed to be the subject of the further studies recommended herein. For further information on each one of these items refer to the Detailed Report in Annex C.

\*\*\* All recommendations are subject to review and verification by studies and further detailed analysis.

Factor	North-South LRT Project	Urbandale Proposal	Alternative***
East LRT Extension	<ul style="list-style-type: none"> <li>Not in scope of project</li> </ul>	<ul style="list-style-type: none"> <li>Phase 2</li> </ul>	<ul style="list-style-type: none"> <li>Not in scope of review***</li> </ul>
West LRT Extension	<ul style="list-style-type: none"> <li>Not in scope of project</li> </ul>	<ul style="list-style-type: none"> <li>Phase 2</li> </ul>	<ul style="list-style-type: none"> <li>Not in scope of review***</li> </ul>
Barrhaven Town Centre (BTC), LRT Extension	<ul style="list-style-type: none"> <li>At initial build</li> </ul>	<ul style="list-style-type: none"> <li>Phase 2</li> </ul>	<ul style="list-style-type: none"> <li>Timing to be considered***</li> </ul>
Fleet Size	<ul style="list-style-type: none"> <li>22 Trains for Barrhaven TC to Ottawa U service</li> </ul>	<ul style="list-style-type: none"> <li>18 Trains for River Road to Bayview service</li> <li>23 Trains for River Road to VIA station service</li> </ul>	<ul style="list-style-type: none"> <li>16 Trains for River Road to Bayview service***</li> <li>22 Trains for River Road to VIA station service***</li> </ul>
Opening day train frequency and short turn	<ul style="list-style-type: none"> <li>Short turn at Leitrim station</li> <li>North of Leitrim – 5 minutes (peak)</li> <li>South of Leitrim – 10 minutes (peak)</li> </ul>	<ul style="list-style-type: none"> <li>No short turn</li> <li>River Road to Bayview – 5 minutes (peak)</li> </ul>	<ul style="list-style-type: none"> <li>Short turn location to be confirmed***</li> <li>Bayview to Short turn – 5 minutes (peak)***</li> <li>Short turn to South – 10 minutes (peak)***</li> </ul>
LRT on Strandherd-Armstrong Bridge	<ul style="list-style-type: none"> <li>At initial build</li> <li>Future grade separation of LRT protected at River Road and Prince of Wales Drive</li> </ul>	<ul style="list-style-type: none"> <li>Deferred for LRT until Phase 2 extension to BTC</li> <li>Grade separation of LRT not required</li> </ul>	<ul style="list-style-type: none"> <li>Depends on timing of Barrhaven extension***</li> <li>Protect for grade separation of LRT at River Road and Prince of Wales Drive</li> </ul>
Riverside South (River Road to east of Mosquito Creek)	<ul style="list-style-type: none"> <li>Alignment through town centre (Main Street) south of Earl Armstrong Road</li> </ul>	<ul style="list-style-type: none"> <li>Alignment in median of Earl Armstrong from River Road to east of Mosquito Creek</li> <li>then follows N-S LRT alignment north from Earl Armstrong</li> </ul>	<ul style="list-style-type: none"> <li>Alignment to remain through Riverside South town centre as per N-S LRT alignment</li> </ul>
Maintenance Centre (MC)	<ul style="list-style-type: none"> <li>Initial build larger than near-term expansion requirements</li> <li>Future expansion protected for</li> </ul>	<ul style="list-style-type: none"> <li>Build to requirements</li> </ul>	<ul style="list-style-type: none"> <li>Build now for reasonable expansion***</li> <li>Protect for future expansion***</li> </ul>
Airport Access	<ul style="list-style-type: none"> <li>Scheduled bus service to airport from nearest station</li> <li>Protect for rail link to airport for future</li> </ul>	<ul style="list-style-type: none"> <li>Bus shuttle to airport from nearest station</li> <li>No future rail link to airport</li> </ul>	<ul style="list-style-type: none"> <li>Scheduled bus service to airport from nearest station***</li> <li>Protect for rail link to airport***</li> </ul>
North-South Corridor	<ul style="list-style-type: none"> <li>Twin track between MC and U of Ottawa</li> <li>Single track with passing sections between MC and BTC</li> </ul>	<ul style="list-style-type: none"> <li>Twin track between Bayview and River Road (except for Dow’s Lake Tunnel)</li> </ul>	<ul style="list-style-type: none"> <li>Requires further study***</li> </ul>
Greenboro Station	<ul style="list-style-type: none"> <li>To be implemented</li> </ul>	<ul style="list-style-type: none"> <li>Removed</li> </ul>	<ul style="list-style-type: none"> <li>To be implemented</li> </ul>
Dow’s Lake tunnel	<ul style="list-style-type: none"> <li>Second tunnel</li> </ul>	<ul style="list-style-type: none"> <li>No second tunnel; single track only</li> </ul>	<ul style="list-style-type: none"> <li>Confirm need for second tunnel</li> </ul>
Bayview Station	<ul style="list-style-type: none"> <li>Station location</li> </ul>	<ul style="list-style-type: none"> <li>Transfer Hub for LeBreton Flats</li> </ul>	<ul style="list-style-type: none"> <li>Phase 1A – Temporary</li> <li>Phase 1B – will depend</li> </ul>

Factor	North-South LRT Project	Urbandale Proposal	Alternative***
LeBreton Station	<ul style="list-style-type: none"> <li>• Station location</li> <li>• Main transfer station</li> </ul>	<ul style="list-style-type: none"> <li>• Defer LRT across LeBreton Flats; implement with downtown tunnel</li> <li>• No station at LeBreton</li> </ul>	on downtown tunnel study*** <ul style="list-style-type: none"> <li>• Defer LRT across LeBreton Flats; implement with downtown tunnel</li> <li>• Provide LeBreton Station</li> <li>• Main transfer station</li> </ul>
Downtown	<ul style="list-style-type: none"> <li>• In reserved transit lane shared with buses on surface of Albert and Slater Streets</li> </ul>	<ul style="list-style-type: none"> <li>• LRT Tunnel</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake downtown tunnel study***</li> </ul>
Extension to Hurdman	<ul style="list-style-type: none"> <li>• To be considered as part of future EA work</li> </ul>	<ul style="list-style-type: none"> <li>• BRT/LRT Transfer station</li> </ul>	<ul style="list-style-type: none"> <li>• Not in scope of review***</li> </ul>
Extension to VIA	<ul style="list-style-type: none"> <li>• Not part of plan</li> </ul>	<ul style="list-style-type: none"> <li>• Terminus of Phase 1B</li> </ul>	<ul style="list-style-type: none"> <li>• Not in scope of review***</li> </ul>

**7. Schedule Review**

The schedule below is intended to show an estimate of the time periods required to initiate an LRT project with a modified scope definition. The schedule for implementation would be greatly influenced by several factors, including the solution chosen, how soon approval to proceed is given and the initiation of various activities including city staff mobilization, contractor negotiations, contractor mobilization, NCC approvals, Federal land use approvals, Environmental Assessment (EA) amendments and approvals (if required), operating and regulatory approvals, etc. Most importantly this assumes that the former N-S LRT configuration (technology, train system infrastructure, civil works) remains valid and it is not necessary to initiate a complete re-tendering process. If a new re-tendering process is required, it will have a significant impact on the project schedule.

Before construction can begin, a number of initial activities are required, including:

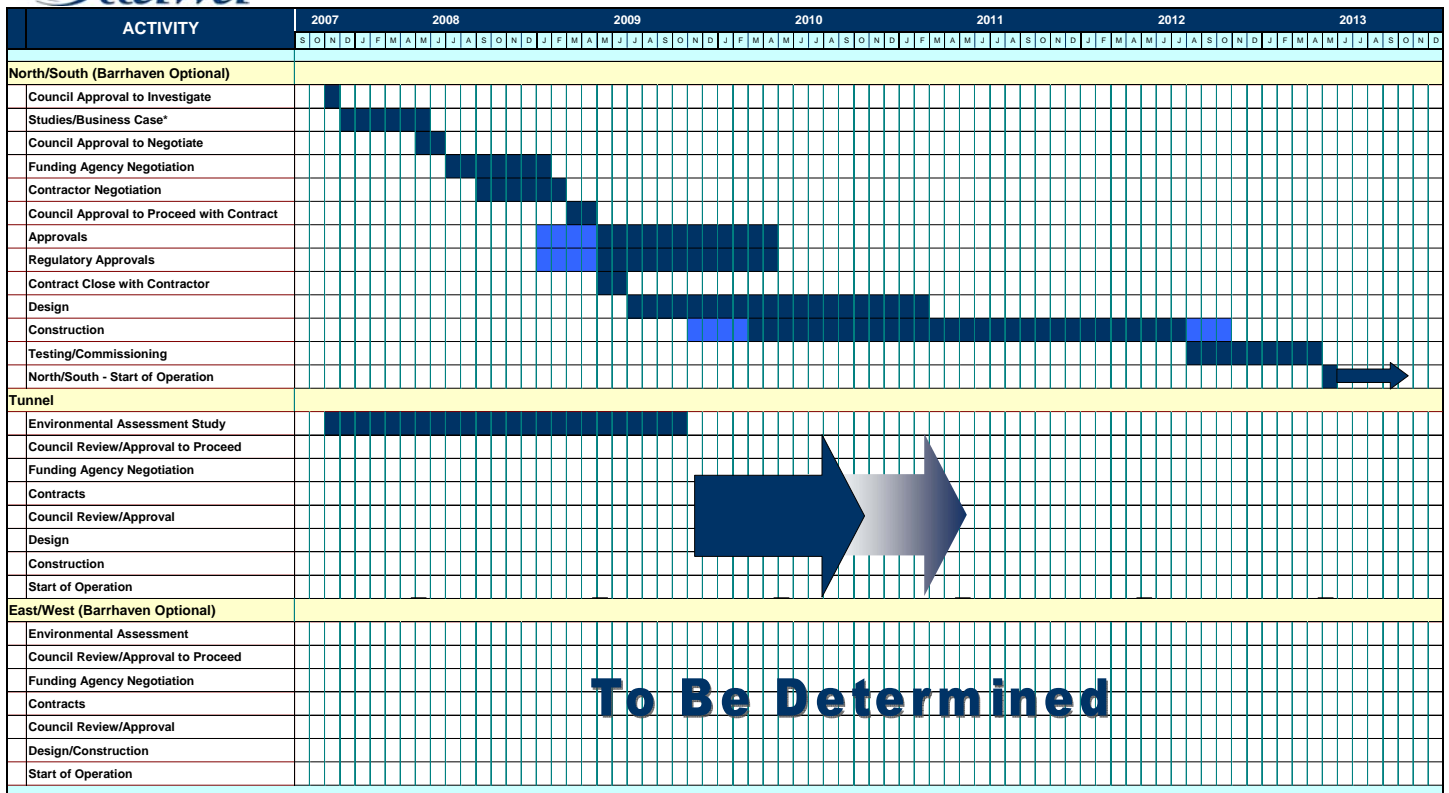
- Completion of the appropriate studies to validate the assumptions;
- Council review and approval time for both approval to proceed to negotiations as well as approval to proceed with acontract;
- Negotiation with funding agencies;
- Re-application or follow-up of previous applications for approval, property acquisitions and utility relocations that were not pursued after the termination of the Project Agreement for the North-South LRT project; and
- Development of the appropriate regulatory regime and approvals.

There are no apparent cost effective methods of keeping the O-Train running once construction has started. As a result it is expected that the O-Train would be de-commissioned at the beginning of construction and train service would resume at the start of LRT service.



Review of Urbandale Rapid Transit Proposal  
(Schedule Report)

Full Size Version in Annex



To Be Determined



Preparatory/Clean-up Activity  
Full Activity

\* Assumes only for North-South LRT  
Entire Schedule assumes not having to repeat the procurement process

October 31, 2007

**8.**



### Financial Analysis

There are some differences between the City financial numbers and the Urbandale financial numbers, presumably because Urbandale did not have access to all of the former N-S LRT project documents. There are also cost increases that the Urbandale proposal may or may not have taken into account (such as cost escalation and twinning the track from the Maintenance Centre to River Road). Because of this, and because there was little detail provided as to how the values were derived, it was difficult to do a direct analysis of the cost savings proposed by Urbandale.

However by using the former N-S LRT project documents to undertake a very high level review of the concepts of the Urbandale proposal, it can be reasonably concluded that:

- The Urbandale cost projections are missing some elements of cost increases;
- Subject to the adjustment of the above, the Urbandale bottom line cost projections are within the reasonable range of costs that could be expected to result from an appropriate value-engineering exercise;
- The Urbandale bottom line cost projections are on the low end of the expected range of costs; and
- Other costs in addition to the contract costs need to be considered including property acquisition, utility work, and City project management.

As in the case of the technical analysis, this is subject to review and verification by the recommended studies. In particular it is recommended that a further value-engineering exercise be performed to identify, with the possibility of removing from the scope (and thus deferring the cost of), all items that are not essential to the successful installation, operation and maintenance of the initial LRT system.

In addition to the costs presented in the Urbandale proposal, Urbandale also proposes that the Maintenance Centre should be capitalized with the overall project rather than financed over the life of the maintenance term. In recognition of the ever-changing financial market, it is recommended that once the cost of the Maintenance Centre is determined, a financial analysis should be undertaken to determine the most cost effective means to build the facility.

### 9. Primary Assumptions

The review of the Urbandale proposal was predicated on the following primary assumptions.

- The former 2006 N-S LRT configuration (technology, train system infrastructure, civil works) remains valid;
- This analysis has been done based on not entering into a re-tendering process. A requirement to enter into a re-tendering process would have significant impacts to the conclusions and recommendations of this report; and
- No account has been made regarding the current litigation between Ottawa Light Rail Corporation and the City.

## SEPARATE DOCUMENTS

### ANNEX A

- Exhibits 1-7
- Schedule

### ANNEX B

- Urbandale LRT System Proposal Materials
  - Proposal Document- An Affordable Solution for Rapid Transit in Ottawa
  - N-S LRT Downtown Map (Tunnel, Sparks and Nicholas)
  - N-S LRT System Phased Implementation Map (Map 1)
  - N-S LRT Cost Savings Map (Map 2)
  - Letter to Ms. Vivi Chi – Development of a Financially Viable LRT System
  - Cost Reduction Estimates E-Mail from M.R. Renfrew, September 04, 2007)

### ANNEX C

- Detailed Report