



**METRO NORTH  
ORAL HEARING**

**Stage 1 Preliminary Ground  
Movement Assessment Report  
Rev 3\_Part1**

**Dublin Metro North**

**Stage 1 Preliminary Ground  
Movement Assessment Report**

**Revision 3**

**February 2009**

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|                                | Originated by                     | Checked by      | Reviewed by      | Approved by |
|--------------------------------|-----------------------------------|-----------------|------------------|-------------|
| <b>ORIGINAL</b>                | NAME<br>R. Leon &<br>D. I. Thomas | NAME<br>P Brown | NAME<br>R Carter | NAME<br>N/A |
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| <b>REVISION</b>                | NAME<br>R. Leon &<br>D. I. Thomas | NAME<br>P Brown | NAME<br>R Carter | NAME<br>N/A |
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| <b>REVISION</b>                                  | NAME<br>A. Leone | NAME<br>D.I. Thomas | NAME<br>D. Hobson | NAME<br>N/A |
| DATE<br>December 2008                            | SIGNATURE        | SIGNATURE           | SIGNATURE         | SIGNATURE   |
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|--------------------------------|--|--|---|--|
| <b>REVISION</b>                | NAME<br>A. Leone   | NAME<br>D.I. Thomas  | NAME<br>D. Hobson   | NAME<br>G. Hindley   |
| DATE<br>February 2009          | SIGNATURE<br> | SIGNATURE<br> | SIGNATURE<br> | SIGNATURE<br> |
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**Appendix F – Schedule of Utilities Identified as Being Subject to 10mm Settlement or Greater**

**Appendix G – Schedule of Infrastructure Identified for Inclusion in Stage 2A Assessment**

**Issue History**

| <b>Issue</b> | <b>Date</b>   | <b>Purpose</b>  |
|--------------|---------------|---|
| First Issue  | Feb 2008      | <p>First issue of Stage 1 report with some sections of the alignment omitted.</p> <p><i>Note: Ground movement assessment based on master Alignment, BMN0000ML00911B01, 2 Oct 2007.</i></p>  |
| Revision 1   | May 2008      | <p>Stage 1 report revised to include the following sections of the alignment:</p> <ul style="list-style-type: none"> <li>• Chainage 12+170m – 13+400m (South of Ballymun to South of DCU)</li> <li>• Chainage 13+400m – 14+600m (Griffith Avenue)</li> <li>• Chainage 14+600m – 15+880m (South of Griffith Avenue)</li> </ul> <p><i>Note: Ground movement assessment for revised sections based on master Alignment, BMN0000ML00911B01, 22 Feb 2008.</i></p>  |
| Revision 2   | December 2008 | <p>Stage 1 Revision 1 report revised to include the following sections of the alignment:</p> <ul style="list-style-type: none"> <li>• Chainage 7+520m – 7+890m (Dublin Airport, update of Stage 1 Report according to the new asset information provided by DAA/IAA)</li> <li>• Chainage 16+660m – 17+530m (South of Mater Stop to North of O’Connell Bridge Stop, update of the Stage 1 Report to reflect the Railway Order Alignment drawings, 14 May 2008 )</li> <li>• Chainage 18+680m – South end of the alignment (St Stephen’s Green Stop, Interconnector Eastbound Tunnel/DMN running tunnels crossing, and Loop arrangement)</li> </ul> <p><i>Note: Ground movement assessment for revised sections based on master Alignment, BMN0000ML00911B01, 14 May 2008.</i></p> |
| Revision 3   | February 2009 | <p>Stage 1 Revision 2 report revised to include the following sections of the alignment:</p> <ul style="list-style-type: none"> <li>• Cross passages Nos. 314, 315 and 316 relocated to coincide with positions shown on Railway Order Drawings Nos: <ul style="list-style-type: none"> <li>- LMN000GA107002 Rev A</li> <li>- LMN000GA107003 Rev A</li> <li>- LMN000GA107004 Rev A</li> </ul> </li> <li>• O’Connell Bridge Stop revised to reflect alternative design stop layout as shown on drawings BMN/0000/MU/8002 to BMN/0000/MU/8028.</li> </ul>   |

**Table A:** Revision History.

**Amendment Tracker – First Issue to Revision 1**

| <b>Section</b> | <b>First Issue to Revision 1 Amendment</b>  |
|----------------|---|
| General        | Text revised and updated throughout report to include amendments relating to additional alignment sections.   |
| Section 1.2    | Tables 1.1 and 1.2 updated for inclusion of the alignment sections identified above.  |
| Section 1.3    | Text with regards to utilities revised to draw DBFM Contractor’s attention to utilities that have not been scheduled.   |
| Table 1.3      | Updated for inclusion of the alignment sections identified above.   |
| Section 1.4    | Recommendations revised. <ul style="list-style-type: none"> <li>• Reference to revise alignment between DCU Stop and Drumcondra Stop deleted.</li> <li>• Recommendation for characterisation surveys to be undertaken for the alignment between DCU and Drumcondra Stops deleted.</li> <li>• Recommendation to review DAA property pending further information from DAA.</li> </ul> |
| Section 5.1    | Further detail added with regards to geological conditions.   |
| Table 5.1      | Updated to include geological sections for alignment between DCU and Drumcondra Stops.  |
| Section 5.2    | Text added to clarify that MGI data has not been used, and that DBFM Contractor will need to consider this data at Stage 2B.  |
| Table 5.2      | Areas of alignment currently excluded from Stage 1 Assessment identified.   |
| Section 5.3    | Text added recommending re-review of DAA property pending further information from DAA.   |
| Table 6.1      | Minor amendments to Griffith Avenue, O’Connell Bridge and St Stephens’ Green Stops construction methodology.  |
| Table 7.3      | SOG Stop Temporary works input statement reference added. Note added with regards to derivation of Griffith Avenue Stop settlement contours.  |
| Table 7.4      | Updated for inclusion of revised areas.   |
| Table 7.5      | Updated for inclusion of revised areas.   |
| Section 8.2    | Table 8.1 and summary of building to be taken forward to Stage 2A revised.<br>Recommendation for further building characterisation surveys for section of alignment between DCU and Drumcondra Stops deleted.   |
| Section 9.3    | Text added explaining that assessment excludes utilities located along alignment between DCU and Drumcondra Stops.  |
| Section 10.1   | Number of infrastructure items selected for further assessment revised. Schedule of DAA infrastructure and buildings identified for further assessment included.  |
| Table 12.1     | Number of items selected for further assessment revised and text added noting that utilities located along alignment between DCU and Drumcondra Stops are excluded from this assessment.  |
| Section 12.3   | Recommendations revised. <ul style="list-style-type: none"> <li>• Requirement to update schedules and settlement contour drawings for areas in abeyance deleted.</li> <li>• Recommendation for conducting further characterisation surveys for section of the alignment between DCU and Drumcondra Stops deleted.</li> </ul>  |

| <b>Section</b> | <b>First Issue to Revision 1 Amendment</b>  |
|----------------|---|
| Appendix A     | <p>Geological Long Sections revised:</p> <ul style="list-style-type: none"> <li>• BMN/GE(0)(3)/011/A03 Exploratory Hole Location Plan and Inferred Geological Section, Sheet 11 of 14.</li> <li>• BMN/GE(0)(3)/012/A03 Exploratory Hole Location Plan and Inferred Geological Section, Sheet 12 of 14.</li> </ul>   |
| Appendix C     | <p>Validation data sheets included for following sections:</p> <ul style="list-style-type: none"> <li>• DCU Stop Box and Adjacent Cut and Cover Tunnels</li> <li>• DCU Stop to Griffith Avenue Stop Bored Tunnels</li> <li>• Griffith Avenue to Drumcondra Stop</li> </ul>  |
| Appendix D     | <p>Predicted Settlement drawings revised:</p> <ul style="list-style-type: none"> <li>• BMN0000TU5051B03 – In abeyance removed and contour lines added for DCU Stop and South of DCU Stop.</li> <li>• BMN0000TU6050B03 – In abeyance removed and contour lines added.</li> <li>• BMN0000TU6051B03 – In abeyance removed and contour lines added.</li> <li>• BMN0000TU7050B03 – In abeyance removed for O’Connell Stop south construction shaft.</li> <li>• BMN0000TU7051B03 – In abeyance removed for O’Connell Stop south construction shaft. In abeyance zone extended north for SSG Stop.</li> </ul>  |
| Appendix E     | <p>Building schedule revised for inclusion of the alignment sections identified above and Airport structures and property. Refer to Appendix E for schedule identifying inclusions and deletions.</p> <p>Settlement and Building Assessment Drawings added:</p> <ul style="list-style-type: none"> <li>• BMN0000TU3052B01</li> <li>• BMN0000TU3053B01</li> <li>• BMN0000TU5065B01</li> <li>• BMN0000TU6063B01</li> <li>• BMN0000TU6064B01</li> </ul> <p>Settlement and Building Assessment Drawings revised:</p> <ul style="list-style-type: none"> <li>• BMN0000TU6065B02 – Buildings to be carried forward to Stage 2A identified in accordance with Appendix E schedules.</li> <li>• BMN0000TU7065B02 – In abeyance removed for O’Connell Stop south construction shaft.</li> <li>• BMN0000TU7066B02 – In abeyance removed for O’Connell Stop south construction shaft. In abeyance zone extended north for SSG Stop.</li> </ul> |
| Appendix G     | <p>Infrastructure schedule revised for inclusion of the alignment sections identified above. Refer to Appendix G for schedule identifying inclusions and deletions.</p>   |
| Appendix H     | <p>Alignment tracker updated.</p>   |

**Amendment Tracker – Revision 1 to Revision 2**

| <b>Section</b> | <b>Revision 1 to Revision 2 Amendment</b>   |
|----------------|---|
| General        | Text revised and updated throughout report to include amendments relating to additional alignment sections. Refer to Table A – ‘Revision History’.  |
| Section 1.1    | Text revised to include amendments due to Railway Order Alignment Drawings, 14 May 2008.  |
| Section 1.2    | Section added explaining discrepancy in chainages presented within the body of the report compared to the ground movement drawings and Railway Order drawings.  |
| Section 1.3    | <ul style="list-style-type: none"> <li>Table 1.1 – ‘Maximum Settlement Assessment Summary’ updated for inclusion of the alignment sections identified in Table A.</li> <li>Table 1.2 – ‘Areas Omitted from Stage 1 Assessment’ deleted.</li> </ul>  |
| Section 1.4    | Table 1.3 – ‘Summary of Existing Buildings, Utilities and Infrastructure to Progress to Stage 2A updated for inclusion of the alignment sections identified in Table A –‘Revision History’.   |
| Section 1.5    | <ul style="list-style-type: none"> <li>Text deleted - Recommendation for updating schedules and settlement contour drawings for sections of the alignment omitted from the revision 1 of the Stage 1 Assessment.</li> <li>Text deleted - Recommendation for reviewing the Revision 1 of the Stage 1 Assessment taking account of Dublin Airport Authority (DAA) re-reviewing of DAA/IAA infrastructure and property schedule.</li> <li>Text added – recommendation that the appointed DBFM Contractor confirm the location of the cross passage Nos. 314 and 315 and update the ground movement predictions accordingly.</li> </ul> |
| Section 2.3    | Section added explaining discrepancy in chainages presented within the body of the report compared to the ground movement drawings and Railway Order drawings.  |
| Section 5.2    | Table 5.1 – ‘Inferred geological Long Sections revised to included updated inferred geological long sections that contain MGI data. These geological long sections have been used as reference in the settlement prediction for the alignment sections identified in Table A. –Revision History’  |
| Section 5.3    | Text updated to include: <ul style="list-style-type: none"> <li>Cross passages Nos 314 and 315</li> <li>Utilities schedules for the alignment sections identified in Table A. –Revision History’</li> </ul>   |
| Section 7.2    | Item 3, Text revised to include Parnell Square and St Stephens Green Stops .  |
| Section 7.3    | Item 3, Text revised to include Parnell Square and St Stephens Green stops.   |
| Section 7.4    | Item 3, Text revised to include Parnell Square and St Stephens Green stops.   |
| Section 7.5    | Text revised to make reference to the Master Alignment file Ref: BMN0000ML0911B01 14 <sup>th</sup> May 2008.  |

| <b>Section</b>                       | <b>Revision 1 to Revision 2 Amendment</b>   |
|--------------------------------------|---|
| Section 7.6                          | <ul style="list-style-type: none"> <li>Table 7.4 – ‘Settlement Assessment Contour Drawings’ amended with the revised drawing numbers.</li> <li>Table 7.5 – ‘Maximum Settlement Assessment Summary’ updated for inclusion of the alignment sections identified in Table A – ‘Revision History’.</li> </ul>   |
| Section 8.2                          | Table 8.1 – ‘Summary of Existing Buildings within Influence Zone’ updated for inclusion of the alignment sections identified in Table A – ‘Revision History’  |
| Section 9.3                          | Text amended to include utilities located in the alignment sections presented in Table A – ‘Revision History’   |
| Section 10.1                         | Text amended - Number of infrastructure items selected for further assessment updated for inclusion of the alignment sections identified in Table A – ‘Revision History’.   |
| Section 10.2                         | Schedule of Airport Infrastructures/Property within DMN Settlement zone of Influence updated.   |
| Section 11                           | Section delete – Alignment Tracker is not current and has been deleted for this Revision.   |
| Section 11.1 (formally Section 12.1) | Table 11.1 – ‘ Summary of Existing Buildings, Utilities and Infrastructure to Progress to Stage 2A’ revised for the inclusion of the alignment sections identified above in Table A –‘Revision History’   |
| Section 11.3 (formally Section 12.3) | <ul style="list-style-type: none"> <li>Text revised for the inclusion of the alignment sections identified above in Table A –‘Revision History’.</li> <li>Text added – recommendation that the appointed DBFM Contractor confirm the location of the cross passage Nos. 314 and 315 and update the ground movement predictions accordingly.</li> </ul>  |
| Appendix A                           | Geological Long Sections included: <ul style="list-style-type: none"> <li>BMN0000GE/227/A01Exploratory Hole Location Plan and Inferred Geological Section (incl. MGI data), Sheet 7 of 14.</li> <li>BMN0000GE/233/A01Exploratory Hole Location Plan and Inferred Geological Section (incl. MGI data), Sheet 13 of 14.</li> <li>BMN0000GE/234/A01Exploratory Hole Location Plan and Inferred Geological Section (incl. MGI data), Sheet 14 of 14.</li> </ul> |
| Appendix B                           | Noted added for: <ul style="list-style-type: none"> <li>Discrepancy of positioning of cross passages Nos 314 and 314.</li> <li>Discrepancy in chainages presented compared to the ground movement drawings and Railway Order drawings.</li> </ul>   |

| <b>Section</b> | <b>Revision 1 to Revision 2 Amendment</b>  |
|----------------|--|
| Appendix C     | <p>Note added for discrepancy in chainages presented compared to the ground movement drawings and Railway Order drawings</p> <p>Validation data sheets included for following sections:</p> <ul style="list-style-type: none"> <li>• South of Mater Stop to North of O’Connell Bridge Stop</li> <li>• Parnell Square Stop.</li> <li>• St Stephen's Green Stop.</li> <li>• Interconnector Eastbound Tunnel/DMN Running Tunnels Crossing.</li> <li>• Loop Arrangements.</li> </ul> <p>Validation data sheets amended for inclusion of the new sections identified above in Table A:</p> <ul style="list-style-type: none"> <li>• Mater Stop to Parnell Square Stop.</li> <li>• Parnell Square Stop to O’Connell Bridge Stop</li> </ul>   |
| Appendix D     | <p>Predicted Settlement drawings revised:</p> <ul style="list-style-type: none"> <li>• BMN0000TU2050B03 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU2051B03 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU3050B03 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU3051B03 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU5050B03 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU5051B04 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU6050B04 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU6051B04 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU6052B03 – Track alignment and chainages amended according to the track alignment issued on 14 May 2008. Contour lines added.</li> <li>• BMN0000TU7050B04 – In abeyance removed at Parnell Square Stop, track alignment and chainages amended according to the track alignment issued on 14 May 2008. Contour lines added.</li> <li>• BMN0000TU7051B04 – In abeyance removed at St Stephens Green Stop, chainages amended according to the track alignment issued on 14 May 2008. Contour lines added.</li> </ul> |

| Section    | Revision 1 to Revision 2 Amendment  |
|------------|---|
| Appendix E | <p>Building schedule revised for inclusion of the alignment sections identified above and Airport structures and property. Refer to Appendix E for schedule identifying inclusions and deletions. Refer to Appendix E for schedule identifying inclusions and deletions</p> <p>Settlement and Building Assessment Drawings revised:</p> <ul style="list-style-type: none"> <li>• BMN0000TU3052B02 – Chainages amended according to the track alignment issued on 14 May 2008. New building identified for Stage 2A assessment.</li> <li>• BMN0000TU3053B02 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU5065B02 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU6063B02 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU6064B02 – Chainages amended according to the track alignment issued on 14 May 2008.</li> <li>• BMN0000TU6065B03 – Track alignment and chainages amended according to the track alignment issued on 14 May 2008. Contour lines added.</li> <li>• BMN0000TU7065B03 – In abeyance removed at Parnell Square Stop, track alignment and chainages amended according to the track alignment issued on 14 May 2008. Contour lines added and new buildings identified for Stage 2A assessment.</li> <li>• BMN0000TU7066B03 – In abeyance removed at St Stephens Green Stop, chainages amended according to the track alignment issued on 14 May 2008. Contour lines added and new buildings identified for Stage 2A assessment.</li> </ul> |
| Appendix G | Infrastructure schedule revised for inclusion of the alignment sections identified above. Refer to Appendix G for schedule identifying inclusions and deletions.  |
| Appendix H | Amendment tracker removed.  |

Railway Procurement Agency  
Ghníomhaireacht um Fháil Iamróid  
Parkgate Business Centre,  
Parkgate Street, Dublin 8, Ireland  
Phone +353 1 646 3400  
Fax +353 1 646 3401  
[www.rpa.ie](http://www.rpa.ie)

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