**Operational Metrics Handbook**

**Version 0.1 – July 2012**

**Network Delivery and Development Directorate**

**Document Control**

|  |  |
| --- | --- |
| **Document Title**  | Operational Metrics Handbook |
| **Author(s)** | John Beavis |
| **Owner**  | Janet Sivorn, Asset Management Office |
| **Distribution**  | MACs, ASCs, HA Regional Contract & Performance Teams |
| **Document Status**  | Live |

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Description** | **Author** |
| 1.0 | 31/07/2012 | First version | John Beavis |
|  |  |  |  |

**Approvals**

|  |  |  |
| --- | --- | --- |
| **Name** | **Document Version** | **Approval Date** |
| Tod Wood | Version 1.0 |  |
|  |  |  |

**Contents**

[**Document Control** 2](#_Toc334700665)

[**Revision History** 2](#_Toc334700666)

[**Approvals** 2](#_Toc334700667)

[**Contents** 3](#_Toc334700668)

[1. Introduction 4](#_Toc334700669)

[2. MAC Service Provider Performance Management Framework 4](#_Toc334700670)

[3. Incident Metrics 5](#_Toc334700671)

[3.1 MAC Incident Clearance 5](#_Toc334700672)

[3.2 ASC Incident Clearance 6](#_Toc334700673)

[4. Scheme Metrics 9](#_Toc334700674)

[4.1 Time 9](#_Toc334700675)

[4.2 Budget 11](#_Toc334700676)

[5. Paved Areas – see CP Handbook until April 13 13](#_Toc334700677)

[6. Flood Metrics - see CP Handbook until April 13 14](#_Toc334700678)

[6.1 Flood Events Are Minimised 14](#_Toc334700679)

[6.2 Flood Event Details Recorded 15](#_Toc334700680)

# Introduction

Each month Service Providers submit Operational Data to NDD Central. This data is then scored using the metrics in the Performance Measurement Framework (PMF).

There are three forms of Operational Data – Incident, Scheme and Asset. For each type of Data this document shows how the PMF metric scores are calculated, giving the information fields within the Data used to do so.

# MAC Service Provider Performance Management Framework

In 2010/11 the previous methods for monitoring our Service Provider performance were developed into a more useful performance management tool in the form of the Service Provider Performance Management Framework (PMF).

The PMF now gives us a standard approach to capturing performance data in order to achieve:

* Visibility of Service Provider performance
* Consistency in the data we capture on Service Provider performance
* Benchmarking of Service Provider performance results.

See the NDD PMF Methodology document and the ASC Performance Management Manuals for further details.

All the Operational Metrics are included in the MAC PMF and/or the ASC PMF.

# Incident Metrics

## MAC Incident Clearance

|  |  |
| --- | --- |
| **Metric Title** | **All Incidents are responded to as quickly as possible** |
| **Applies to** | MACs |
| **Purpose / Description** | To measure the Provider's effectiveness and timeliness in responding to Incidents on the Network  |
| **Measures** |  |
| REI03 (M) | Percentage of ‘reactive’ ISU call-outs to emergency incidents achieved within the response times defined in the Contract |
| **Definitions** |  |
| *Emergency Incidents* | As defined in MAC Conditions of Contract |
| *ISU* | Service Provider personnel providing a first response 24/7 capability for any Incident |
| *Reactive call out* | Instances in which an ISU attends an Emergency Incident as a result of being dispatched by the Provider’s control centre or a 3rd party |
| *Response Time* | The time elapsed (in minutes) from notification of the initial incident to the Provider’s Control Centre (Incident Data Field: LOG\_DATE\_TIME), to the time of notification of arrival on site of the emergency incident by the ISU (Incident Data Field: ON\_SITE\_DATE\_TIME) |
| **Methodology** | REI03 is calculated as the combined sum of all ‘reactive’ call outs responded to within the target time, divided by the total number of ‘reactive’ call outs attended |
| **Data Source / Requirements** | Provider’s incident records |
| **Data Input** (Frequency / Reporting Period: Calendar month) |
| **Field** | **Var** | **Type** | **Calculation** | **Decimals** | **Range** |
| Number of `reactive’ emergency ISU deployments (in month) | (A) | Integer | Total `Reactive’ emergency ISU deployments (in month) | 0 | 0 – 1000 |
| Number of `reactive’ deployments achieved within target response time | (B) | Integer | Total deployments where (ON\_SITE\_DATE\_TIME - LOG\_DATE\_TIME) <= Target response time | 0 | 0 – 1000 |
| **Calculations** (Individual Monthly Performance) |
| **Measure** | **Type** | **Calculation** | **Decimals** | **Range** | **Target** |
| REI03 (M) | Percentage | B/A \* 100 | 2 | 0 – 100 | Set locally |

## ASC Incident Clearance

|  |  |
| --- | --- |
| **Metric Title** | Incidents are cleared rapidly |
| **Purpose / Description** | To measure the Provider's performance with regard to incident clearance on the network. Following incidents the Provider will undertake to make safe the asset and to ensure that the expeditious movement of traffic on the Area Network is secured. |
| **Measures** |  |
| AMOR Performance Metrics 1, 2 & 3 | Performance Metric 1During month, maximum duration from *Provider Incident**identification/notification from**TOS/Emergency Services* throughto *production of Provider Tactical**Incident Response Plan* Performance Metric 2Monthly mean: For all Provider attended HA led Incidents, duration from *Lane Closure* through to *Lane Opening*Performance Metric 3Monthly mean: From *Incident command handover* from the Emergency Services to the HA, through to *Lane Opening* |
| **Definitions** |  |
| *Provider Incident**identification/notification from**TOS/Emergency Services* | Incident data field: LOG\_DATE\_TIME |
| *Production of Provider Tactical**Incident Response Plan* | Incident data field: TIRP\_PRODUCTION\_DATE\_TIME |
| *Lane Closure* | Describes the situation when a live running lane is partially or fully obstructed by an Incident. Incident data field: Earliest of -LANE\_CLOSURE\_DATE\_TIMEFIRST\_RESTRICTION\_ON\_DATE\_TIMENOTIFIED\_FIRST\_ON\_DATE\_TIME |
| *Lane Opening* | Incident data field: Later of - LANE\_OPENING\_DATE\_TIMELAST\_RESTRICTION\_OFF\_DATE\_TIMENOTIFIED\_LAST\_OFF\_DATE\_TIME |
| *Incident command handover* | Incident data field: CMD\_HANDOVER\_DATE\_TIME |
| **Methodology** | AMOR Part 3, Table 3.1, outlines the 36 different combinations of the fields Road Type/Emergency Services Present/Time of Day/Road Traffic Levels against which **Incidents are cleared rapidly** can be scored.All 36 may not occur during the qualifying period, in which case those combinations not occurring should be excluded from calculations.Each of the combinations is assessed to determine if the Service Provider has met the relevant target, and an overall score of the targets met as a percentage of the total applicable combinations is calculated.PM1For each combination (maximum 18) the greatest value of *TIRP\_PRODUCTION\_DATE\_TIME – (LOG\_DATE\_TIME)* for an incident in the qualifying period is compared to the target time and a pass or fail is awarded. PM2For each combination (maximum 9, does not apply to incidents where Emergency Services present) the mean of *(Lane Opening) – (Lane Closure)* for incidents in the qualifying period is compared to the target time and a pass or fail is awarded.PM3For each combination (maximum 9, applies to incidents where Emergency Services present only) the mean of *(Lane Opening) – (CMD\_HANDOVER\_DATE\_TIME)* for incidents in the qualifying period is compared to the target time and a pass or fail is awarded. |
| **Data Source / Requirements** | Incident Logs/Performance Reports |
| **Data Input**  |
| **Field** | **Var** | **Type** | **Calculation** | **Decimals** | **Range** |
| Number of AMOR 3.1 combinations applicable for Performance Metric 1  | (A) |  Integer | - |  0 | 0-18 |
| Of (A), number of combinations meeting target | (B) | Integer | - |  0 | 0-18 |
| Number of AMOR 3.1 combinations applicable for Performance Metric 2  | (C) |  Integer | - |  0 | 0-9 |
| Of (C), number of combinations meeting target | (D) | Integer | - |  0 | 0-9 |
| Number of AMOR 3.1 combinations applicable for Performance Metric 3  | (E) | Integer | - |  0 | 0-9 |
| Of (E), number of combinations meeting target | (F) | Integer | - |  0 | 0-9 |
| **Calculations**  |
| **Measure** | **Type** | **Calculation** | **Decimals** | **Range** | **Target** |
| AMOR Performance Metrics 1, 2 & 3 | Integer | (B + D + F) / (A + C + E) \* 100 | 2 | 0 – 100 | 100 |

# Scheme Metrics

## Time

|  |  |
| --- | --- |
| **Metric Title** | **Deliver Schemes on Time** |
| **Applies to** | MACs |
| **Purpose / Description** | To measure the accuracy of time predictions, on *eligible schemes* exceeding £100K in value. The indicators are designed to reflect the impact on customers and the HA of *milestones* in the process of design and construction of these schemes not being achieved at predicted times.  |
| **Milestone Description** | The metric involves a series of *milestones* throughout the life of a scheme: 1. Commitment to detailed design 2. Completion of detailed design 3. Agreement of Cost 4. Agreement of predicted start and finish dates 5. Actual start of Construction 6. Actual Completion of Construction 7. Agreement of final account at first valuation after completion  |
| **Measures** | (average current + preceding 11 months) |
| TP01 (A) | Variance between actual date at milestone 2 (Scheme Data Field: ACTUAL\_DATE\_DESIGN\_COMPLETION), compared to date at 2 as predicted at milestone 1 (Scheme Data field: PREDICTED\_DATE\_DESIGN\_COMPLETION). |
| TP02 (A) | Variance between actual date at milestone 5 (Scheme Data Field: ACTUAL\_DATE\_CONSTRUCTION\_START), compared to date at 5 as predicted at milestone 4 (Scheme Data Field: PREDICTED\_DATE\_CONSTRUCTION\_START).  |
| TP03 (A) | Variance between actual date at milestone 6 (Scheme Data Field: ACTUAL\_DATE\_CONSTRUCTION\_END), compared to date at 6 as predicted at milestone 4 (Scheme Data Field: PREDICTED\_DATE\_CONSTRUCTION\_END). |
| TP04 (A) | Variance between period between milestones 5 to 6 as predicted at milestone 4 (Using Scheme Data Fields: PREDICTED\_DATE\_CONSTRUCTION\_END - PREDICTED\_DATE\_CONSTRUCTION\_START) , compared to actual period between 5 – 6 (Using Scheme Data Fields: ACTUAL\_DATE\_CONSTRUCTION\_END - ACTUAL\_DATE\_CONSTRUCTION\_START) |
| **Definitions** |  |
| *Eligible Scheme*  | Scheme currently approved by HA, with an estimated *scheme cost* over £100K at *milestone* 1.  |
| **Methodology** | As part of preparing the annual programme, covering works funded for each financial year, a record for each Scheme is produced and relevant details recorded, including project details and the predicted date for completion of detailed design (*milestone* 1). When detailed design is completed relevant details are recorded and the variation from the prediction is calculated and recorded (*milestone* 2). Similarly, when all parties agree the construction dates – (during *milestone* 4) – the predictions for the start date for construction and completion date for construction, and therefore the construction duration are recorded. The actual dates for Start and End of Construction are promptly recorded as they occur and at the End of Construction the construction duration is calculated and entered into the records (*milestone* 5 & 6)  |
| **Data Source / Requirements** | Provider’s scheme records |
| **Data Input** (Frequency / Reporting Period: Calendar month) |
| **Field** |  | **Type** | **Calculation** | **Decimals** | **Range** |
| PREDICTED\_DATE\_DESIGN\_COMPLETION | (A) | Integer | - | 0 | Any date |
| ACTUAL\_DATE\_DESIGN\_COMPLETION | (B) | Integer | - | 0 | Any date |
| PREDICTED\_DATE\_CONSTRUCTION\_START | (C) | Integer | - | 0 | Any date |
| PREDICTED\_DATE\_CONSTRUCTION\_END | (D) | Integer | - | 0 | Any date |
| ACTUAL\_DATE\_CONSTRUCTION\_START | (E) | Integer | - | 0 | Any date |
| ACTUAL\_DATE\_CONSTRUCTION\_END | (F) | Integer | - | 0 | Any date |
| Predicted Length Construction duration | (G) | Integer | (D) – (C) | 0 | 0-1000 |
| Actual Length Construction duration | (H) | Integer | (F) – (E) | 0 | 0-1000 |
| **Calculations** (average current + preceding 11 months) |
| **Measure** | **Type** | **Calculation** | **Decimals** | **Range** | **Target (in days)** |
| TP01 (A) | Integer | Σ (B-A) for all qualifying schemes | 0 | 0-500 | Set Locally |
| TP02 (A) | Integer | Σ (E-C) for all qualifying schemes | 0 | 0-500 | Set Locally |
| TP03 (A) | Integer | Σ (F-D) for all qualifying schemes | 0 | 0-500 | Set Locally |
| TP04 (A) | Integer | Σ (H-G) for all qualifying schemes | 0 | 0-500 | Set Locally |

## Budget

|  |  |
| --- | --- |
| **Metric Title** | **Deliver Schemes to Budget** |
| **Applies to** | MACs |
| **Purpose / Description** | To measure the accuracy of cost predictions, on *eligible schemes* exceeding £100K in value. The indicators are designed to reflect the impact on customers and the HA of *milestones* in the process of design and construction of these schemes not being achieved at the predicted cost. |
| **Milestones Description** | 1. Commitment to detailed design 2. Completion of detailed design 3. Agreement of Cost 4. Agreement of predicted start and finish dates 5. Actual start of Construction 6. Actual Completion of Construction 7. Agreement of final account at first valuation after completion  |
| **Measures** |  |
| CP01 (A) | Variance between the sum of costs at *milestone* 3 (Scheme Data Field: PREDICTED\_COST\_AT\_AGREEMENT\_OF\_COST) compared to those costs predicted at *milestone* 1 (Scheme Data Field: PREDICTED\_COST\_AT\_DESIGN\_COMMITMENT), as a percentage of costs predicted at *milestone* 1  |
| CP02 (A) | Variance between the sum of costs at *milestone* 7 (Scheme Data Field: ACTUAL\_COST\_1ST\_VALUATION) compared to these costs predicted at *milestone* 3 (Scheme Data Field: PREDICTED\_COST\_AT\_AGREEMENT\_OF\_COST), as a percentage of costs predicted at *milestone* 3. |
| CP03 (A) | Variance between the sum of costs at *milestone* 7 (Scheme Data Field: ACTUAL\_COST\_1ST\_VALUATION) compared to these costs predicted at *milestone* 1 (Scheme Data Field: PREDICTED\_COST\_AT\_DESIGN\_COMMITMENT), as a percentage of costs predicted at *milestone* 1.  |
| **Definitions** |  |
| *Eligible Scheme*  | Scheme currently approved by HA, with an estimated *scheme cost* over £100K at *milestone* 1. |
| **Methodology** | As part of preparing the annual programme, covering works funded for each financial year, a record for each Scheme is produced and relevant details are recorded, including project details and prediction of final cost (*milestone* 1). When all parties agree the construction costs (*milestone* 3), the provider records the revised predicted final *scheme cost* and the date of this entry, against the project record. Finally, the provider records the projected final *scheme cost*, at the first valuation after the End of Construction (*milestone* 7) and the date of this entry, against the project record.  |
| **Data Source / Requirements** | Provider’s scheme records |
| **Data Input** (Frequency / Reporting Period: average current + preceding 11 months) |
| **Field** |  | **Type** | **Calculation** | **Decimals** | **Range** |
| PREDICTED\_COST\_AT\_DESIGN\_COMMITMENT | (A) | Integer | - | 0 | 0 - 5000000 |
| PREDICTED\_COST\_AT\_AGREEMENT\_OF\_COST | (B) | Integer | - | 0 | 0 - 5000000 |
| ACTUAL\_COST\_1ST\_VALUATION | (C) | Integer | - | 0 | 0 - 5000000 |
| **Calculations** (average current + preceding 11 months) |
| **Measure** | **Type** | **Calculation** | **Decimals** | **Range** | **Target** |
| CP01 (A) | Percentage | Σ (B-A)/A | 2 | 0 - 100 | Set Locally |
| CP02 (A) | Percentage | Σ (C-B)/B | 2 | 0 - 100 | Set Locally |
| CP03 (A) | Percentage | Σ (C-A)/A | 2 | 0 - 100 | Set Locally |

**The following Metrics will be scored as Constructed Provider until April 2013**

**See CP Handbook for details**

# Paved Areas – see CP Handbook until April 13

|  |  |
| --- | --- |
| **Metric Title** | **Make Safe Defects: Paved Areas** |
| **Applies to** | ASCs and retrofitted MACs |
| **Purpose / Description** | To measure the Provider’s performance in ensuring that paved areas provide a safe and even surface for all road users.  |
| **Measures** |  |
| Defects Made Safe | Defects – potholes, surface deformation, iron work, trip hazards - are made safe within 24 hours of verification |
| **Definitions** |  |
| Defects |  > Pothole > 150 mm diameter, or of > depth than that of the surface course thickness, or of > depth than 40 mm. > Local Surface Deformation > 40 mm > Ironwork - Difference in level around ironwork > 25 mm > Pothole > 25 mm depth or > 150 mm diameter > Local Surface Deformation > 25 mm > Trip Hazard - Any step change > 25 mm |
| Verification  | Point at which defect is recorded, either arising from an inspection (Data field: DEFECT\_INSPECTION\_DATE\_TIME) or by notification (Data field: DEFECT\_NOTIFICATION\_DATE\_TIME) |
| Made Safe | Point at which defect is made safeData field: MAKE\_SAFE\_DATE\_TIMEorData field: PERMANENT\_REPAIR\_DATE\_TIME |
| **Methodology** | This metric is measured as the percentage of those defects made safe within 24 hours of verification  |
| **Data Source / Requirements** | Provider’s Asset Defect Data Standard |
| **Data Input** (Frequency / Reporting Period: Calendar month) |
| **Field** |  | **Type** | **Calculation** | **Decimals** | **Range** |
| Total Number of Verified Defects in month | (A) | Number | - | 0 | 0-1000 |
| Of (A), Total Number of Defects Made Safe within 24 hours of Verification | (B) | Number | Total Defects where: Made Safe – Verification <= 24 hours | 0 | 0-1000 |
| **Calculations** (Individual Monthly Performance) |
| **Measure** | **Type** | **Calculation** | **Decimals** | **Range** | **Target**  |
| Defects Made Safe | Percentage | (B)/(A)\*100 | 2 | 0-100 | 100 |

# Flood Metrics - see CP Handbook until April 13

## Flood Events Are Minimised

|  |  |
| --- | --- |
| **Metric Title** | **Flood Events Are Minimised** |
| **Applies to** | ASCs and retrofitted MACs |
| **Purpose / Description** |  To demonstrate that the relevant drainage system is managed and maintained to minimise the risk of Flood Events on trafficked surfaces and remove standing water  |
| **Measures** |  |
| Flood Events | The number of Flood Events on trafficked surfaces recorded on the Asset Defect Data Standard (ADDS)Total number of records where DEFECT\_CODE = FLOOD |
| **Definitions** |  |
| *Flood event*  | A Flood Event is one that causes disruption or delay on the highway forat least 15 minutes.  |
| **Methodology** |  |
| **Data Source / Requirements** | HADDMS Records  |
| **Data Input** (Frequency / Reporting Period: Calendar month) |
| **Field** |  | **Type** | **Calculation** | **Decimals** | **Range** |
| Flood Events | (A) | Number | Total Incidents for which DEFECT\_CODE = FLOOD | 0 | 0-100 |
| **Calculations** (Individual Monthly Performance) |
| **Measure** | **Type** | **Calculation** | **Decimals** | **Range** | **Target**  |
| Flood Events | Number | (A) | 0 | 0-100 | 0 |

## Flood Event Details Recorded

|  |  |
| --- | --- |
| **Metric Title** | **Flood Event details recorded** |
| **Applies to** | ASCs and retrofitted MACs |
| **Purpose / Description** |  To demonstrate that Flood Events are cleared according to the time scale set out in AMOR |
| **Measures** |  |
| Flood Events not set to ‘Closed’ status within 28 days | Total number of instances in which a Flood Event was not set to ‘Closed Status’ within 28 days |
| **Definitions** |  |
| *Flood Event*  | A Flood Event is one that causes disruption or delay on the highway forat least 15 minutes.  |
| *Flood Event start*  | Data field: FLOOD\_NOTIFICATION\_DATE\_TIME |
| *Flood Event end* | Data field: MAKE\_SAFE\_DATE\_TIME  |
| **Methodology** |  |
| **Data Source / Requirements** | Provider’s Routine and Planned Maintenance System  |
| **Data Input** (Frequency / Reporting Period: Calendar month) |
| **Field** |  | **Type** | **Calculation** | **Decimals** | **Range** |
| Flood Events not set to ‘Closed’ status within 28 days | (A) | Number | Total incidents in which MAKE\_SAFE\_DATE\_TIME – FLOOD\_NOTIFCATION\_DATE\_TIME > 28 days | 0 | 0-100 |
| **Calculations** (Individual Monthly Performance) |
| **Measure** | **Type** | **Calculation** | **Decimals** | **Range** | **Target**  |
| Flood Events Not Set To ‘Closed’ Status within 28 days | Number | (A) | 0 | 0-100 | 0 |