

WORKED KPI EXAMPLES

Note: This and subsequent notes, in these worked examples, are for illustration purposes only and not intended for use in a contract – do not transfer the notes to the template. These examples are all outline examples and in many cases a greater amount of detail would be required to be included in the KPI to ensure that the intent is clearly understood and met.

KPI	KPI Name	Description of Example
KPI-01	Equipment Availability	A simple example for availability where a stable level of availability is achievable due to the large number of items involved. The example demonstrates basic tailoring of <i>ASDEFCON (Support)</i> clauses and performance curves.
KPI-02	Demand Satisfaction Rate	A simple example of a KPI that is based 'per event' and uses a look-up table to determine the Adjusted Performance Score.
KPI-03	Mission System Availability	An example of a time-variant KPI (complex). The performance level required is dynamic and based on monthly operational availability planning, while still maintaining a 3-monthly Review Period for the contract.
KPI-04	Supply Responsiveness	A moderately complex example used to demonstrate weighted scores for performance required over two different priority levels. The example also demonstrates a two-dimensional look-up table.

1 KPI-01: EQUIPMENT AVAILABILITY

Note: This example illustrates a simple KPI for equipment availability. To use a constant (static) KPI for availability generally requires a large fleet size (eg, a hundred RIs) where the numbers that are potentially available do not fluctuate significantly with depot maintenance or modification programs. For example, the RIs (which can be stand-alone equipment) either have a constant unavailability rate for deeper maintenance, or are predominantly subject to corrective maintenance.

Where the number of systems 'potentially available' varies (eg, on a month-by-month basis) with deeper maintenance or modification programs refer to KPI-03 for an alternative approach to an availability KPI.

1.1 KPI Explanation

1.1.1 KPI-01: Equipment Availability (A_E) is the percentage of serviceable [equipment] available for Defence use on a daily basis from the total [equipment] fleet size of 200 items. A_E is used to evaluate the level of performance provided by the Contractor, and enabling the Outcome of Defence unit readiness.

1.1.2 KPI-01 is designed to encourage availability, firstly, through ensuring a minimum level of availability for operational purposes (including military exercises) and, secondly, providing sufficient additional [equipments] for Defence unit-level training at each of the five user units.

1.1.3 The Contractor's performance against KPI-01 shall be calculated using the following formula:

$$\text{KPI-01 } (A_E) = \#SERV / 200 * 100\%$$

Where:

#SERV = the total number of serviceable [equipment] held by Defence. This includes [equipment] held by operational units and reserve stocks, including those [equipments] that are unserviceable but which have not yet been notified to the Contractor as being unserviceable and available for collection from the DIDS warehouse.

200 = is the total number of [equipment].

1.2 KPI Measurement

1.2.1 The number of serviceable items for KPI-01, (ie, #SERV) shall be measured each Working Day at 09:00hrs by stock item location, for Defence units and reserve stock.

Note: The following 'cross-check' by counting unserviceable items could be listed as an OPM. However, as its purpose is an instantaneous confirmation that all items are included in the calculation it is useful to include this requirement within the KPI.

1.2.2 The remaining, unserviceable, [equipment] include those held by the Contractor and those in dispatch at the Defence Integrated Distribution System (DIDS) warehouse that the Contractor has been notified of. Unserviceable [equipment] units should be counted and added to the #SERV units to confirm that all units have been counted (ie, #SERV + total unserviceable = 200).

1.2.3 When obtaining the parameters and measurement data used to determine the Contractor's performance against KPI-01 under clause 1.1.3, the following conditions shall apply:

- a. for the purposes of the Contract, unserviceable items of [equipment] are deemed to be serviceable if not made available to the Contractor due to deployment or other operational requirements; and
- b. performance relief, for a reduced level of availability, may be sought for [equipment] held by the Contractor and undergoing modification programs approved by the Commonwealth Representative.

1.2.4 Performance Measures, including parameters and other measurement data used to determine performance against KPI-01, shall be sourced from the MILIS each Working Day, by the Contractor, as follows:

- (i) [equipment] units held at the Defence operating units;
- (ii) [equipment] units held in serviceable reserve stock holdings;
- (iii) [equipment] units pending dispatch at the DIDS warehouse; and
- (iv) [equipment] units identified as being held at the Contractor's location(s).

1.3 Achieved Performance

1.3.1 The Contractor's Achieved Performance for KPI-01 for a Review Period shall be determined as the average (statistical mean) of the A_E results recorded for each Working Day during the Review Period.

1.4 Adjusted Performance Score

1.4.1 The Adjusted Performance Score for KPI-01 for a Review Period shall be calculated from the Achieved Performance using the formulae detailed below in Table 1:

Note: The Required Performance Level in this example is an A_E of 90% for the review Period, which represents an Adjusted Performance Score of 100%. In this instance, the Performance Bands also capture the requirement for a minimum level of capability (without Training), which is 70% and used as the boundary between Performance Bands I and II.

If the Achieved Performance for KPI-01 for the Review Period is...	the Performance Band is...	the Adjusted Performance Score (%) is calculated using the formula ...
< 90 and \geq 70	Performance Band I	$APS = \text{Achieved Performance} + 10$ Note: the above was derived from: $= (100-80) / (90-70) * (\text{Ach.Perf.} - 70) + 80$
<70 and \geq 50	Performance Band II	$APS = 4 \times \text{Achieved Performance} - 50$ Note: the above was derived from: $= (80-0) / (70-50) * (\text{Ach.Perf.} - 50) + 0$
< 50	Performance Band III	$APS = 0$
\geq 90	Performance Band IV	$APS = 100$

Table 1: KPI-01 Adjusted Performance Curve Formulae

1.5 Operation of formulae for Adjusted Performance Score – FOR INFORMATION ONLY

1.5.1 Figure 1 below illustrates the relationship between the Achieved Performance and the Adjusted Performance Score for KPI-01 and the operation of the formulae in clause 1.4.

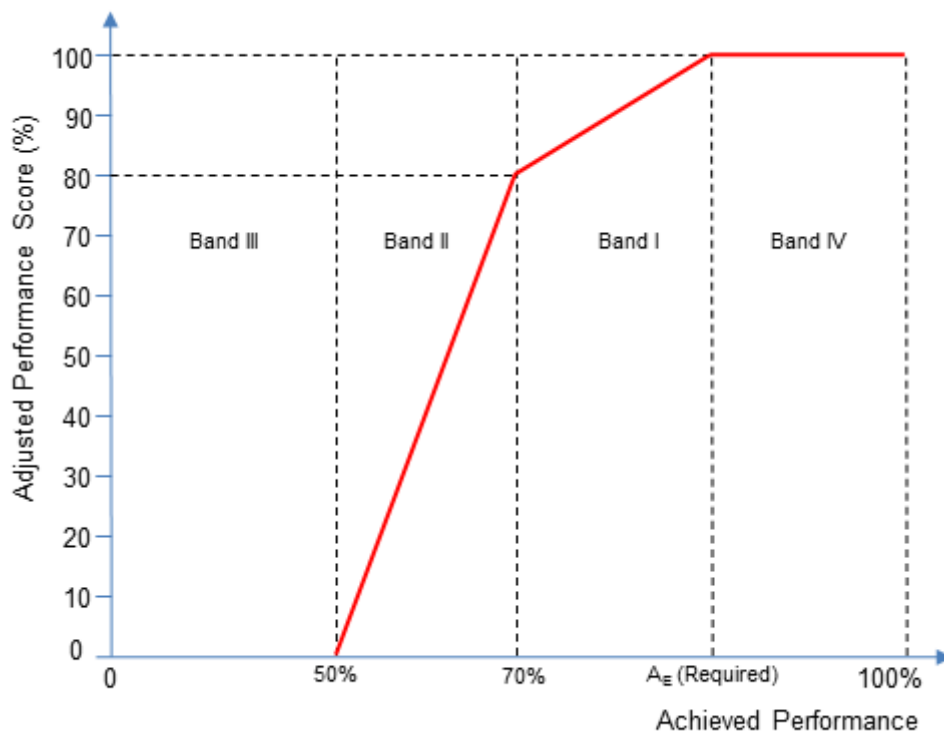


Figure 1: KPI-01 Adjusted Performance Score from Achieved Performance Curve

2 KPI-02: DEMAND SATISFACTION RATE

Note: This example illustrates a simple KPI for Demand Satisfaction Rate (DSR) based on a single Performance Measure and subject to conditions regarding “priority one” demands. In a specific contract, priority one demands would need to be defined. The approach to determining the Adjusted Performance Score from the Achieved Performance uses a look-up table, as opposed to the standard performance curve (this method may be suited to smaller contracts).

DSR is a relatively simple KPI that measures the percentage of demands satisfied within a specified period. This simplicity, however, has its limitations. For example, 80% of demands may need to be satisfied with 24 hours, but that measurement does not consider what happens to those items not delivered within that period. Furthermore, a single DSR measure does not account for different demand-priority levels. Although DSR can be reported from MILIS, excluding Commonwealth delays from the measurement can be difficult.

A more complex supply KPI, which considers more than one level of demand-priority and outstanding deliveries, is included in KPI-04: Supply Responsiveness.

2.1 KPI Explanation

2.1.1 KPI-02: Demand Satisfaction Rate (DSR) is the percentage of deliveries of RIs and Non-RIs that satisfy demands within Required Delivery Date (RDD), as defined through the Military Integrated Logistics Information System (MILIS).

2.1.2 KPI-02 is designed to encourage Supply Services that are responsive to the needs of Defence maintenance, thereby contributing to the required Outcome of system capability.

2.1.3 The Contractor's performance against KPI-02 shall be calculated using the following formula:

$$\text{DSR} = \# \text{ satisfied demands} / \text{total demands} * 100\%$$

Where:

demands satisfied = the number of demands for Stock Items satisfied within the RDD, measured from the time that the demand is placed on the Contractor until a serviceable Stock Item has been Accepted at the XYZ Defence warehouse.

total demands = the total number of demands for Stock Items placed on the Contractor that had an RDD that fell within the Review Period.

2.2 KPI Measurement

2.2.1 The parameters and measurement data used to determine the Contractor's performance against KPI-02, under clause 2.1.3, shall be measured with respect to the Review Period that includes the actual delivery. If a demand is placed in the current Review Period with an RDD for the following Review Period, then:

- a. if delivered early and before the end of the current Review Period, it shall be counted as a satisfied demand within the current Review Period; or
- b. the delivery for that demand shall counted for the subsequent Review Period (ie, the Review Period containing the scheduled RDD).

2.2.2 When measuring KPI-02, the following conditions shall apply:

Note: The following condition places an emphasis on high-priority demands by capping the Achieved Performance result (for all priority levels) to a pre-determined level within Performance Band II. In this example the Required Performance Level is 90%.

if more than ten (10) priority-one demands are not satisfied within the RDD during the Review Period, and the calculated Achieved Performance exceeds 60%, then the Achieved Performance shall be reduced to a figure of 60%.

2.3 Achieved Performance

Note: In this instance, the KPI is calculated for an entire Review Period (not a daily or monthly requirement); hence, the Achieved Performance can be calculated using the KPI's formula.

2.3.1 The Contractor's Achieved Performance for KPI-02 for a Review Period shall be determined using the formula for DSR at clause 2.1.3 and subject to clauses 2.2 and 2.2.2.

2.4 Adjusted Performance Score (Core)

2.4.1 The relationship between Achieved Performance and Adjusted Performance Score for a Review Period for KPI-02 is determined in accordance with Table 2.

- 2.4.2 The Adjusted Performance Score is found by locating the Achieved Performance in the top row of Table 2 (or next lowest value) and reading the percentage score from the table cell immediately below (in the second row).
- 2.4.3 The relevant Performance Band is read from the third row of Table 2, located below the relevant Adjusted Performance Score.

Note: These numbers are arbitrary and for illustration purposes only. Each Contract will require values to be defined appropriate to the system, applicable supply chain, and the premium that Defence is prepared to pay for faster / higher priority Service.

Note: In the example table below, the Adjusted Performance Score of greater than 100% (ie, 105%, located in Performance Band IV) allows for a Performance Incentive to be calculated in accordance with Annex C to Attachment B. Also note that the example uses only a few columns to illustrate the technique; however, in an actual look-up table, more columns may be required to provide sufficient granularity. Even though this technique does not use a curve and formulae, the values approximate the curve and Performance Bands must still be identified for use in various clauses throughout the ASDEFCON (Support) Contract.

DSR achieved or bettered:	<50%	50%	60%	70%	75%	80%	83%	86%	90%	95%
Adjusted Performance Score:	0%	40%	60%	80%	85%	90%	93%	96%	100%	105%
Performance Band:	III	II	II	I	I	I	I	I	I	IV

Table 2: DSR Adjusted Performance Score determination from Achieved Performance

3 KPI-03: MISSION SYSTEM AVAILABILITY

This example for Mission System availability illustrates the use of, and documentation for, a time-variant or 'dynamic' KPI. A significant challenge with this type of KPI is the on-going variation in the level of availability due to fluctuations caused by maintenance cycles, modification programs and, in this example, the initial roll-out of a fleet of systems. If the system is not subject to these variations, and the required availability is fixed at or below the minimum level achievable, then the calculation of monthly availability (as input to the determination of the Adjusted Performance Score) is not required (and an approach like example KPI-01 would be more effective).

Incentivising availability is challenging when Defence units are involved in support and the Contractor-provided support is 'one-step removed', but the Contractor is providing multiple inputs to the capability (eg, providing both serviceable Mission Systems directly to the user and serviceable spares for Defence unit-level maintenance). While this example covers the major time-variant aspects of such a KPI, an actual KPI for some Defence systems could be considerably more complex and may depend more explicitly on the maintenance schedule, maintenance policies, and information management systems unique to the Materiel System.

This generic example is not explicit to a particular type of system, but could be used to measure availability on a 24-hour-a-day basis for vehicles, ships (in a reasonably large fleet), aircraft and some electronic systems (eg, communications terminals, not networks), in those circumstances where it is practical to continuously track system status and it makes operational sense to do so. Availability can also be assessed at a set time each day (note clause 3.2 below), such as the daily Aircraft Availability metric used by ASD (refer to Chapter 3 of the ASD Performance Based Contracting Handbook for additional guidance).

This example considers the availability of a system as either simply available (for operation or Defence unit-level maintenance) or not available. However, for many complex systems, availability is not as clear cut. Again, using the ASD approach for Aircraft Availability, a system can be fully, partially, or not mission capable (refer to Chapter 3 of the ASD Performance Based Contracting Handbook for additional guidance) and additional definition (eg, a mission critical items list or minimum essential systems list) is required to determine the actual availability state. When there are multiple levels of availability, a scoring system applied at set times of the day is essential, rather than continuous measurement. Calculation of the Achieved Performance may still use the monthly availability determination but, in addition, must address the acceptable ratio of full, partial and not mission-capable systems.

3.1 KPI Explanation

3.1.1 KPI-03: Mission System Availability (A_{MS}) is the percentage of Mission Systems available for Defence use and operational unit-level maintenance from the total fleet of [Mission Systems]. A_{MS} is used to evaluate the level of performance provided by the Contractor in enabling the required Outcome of system capability.

Note: High level KPIs like this one often integrate performance from across a range of areas, such as engineering, maintenance and supply, as shown in the next two clauses and the associated definitions of the Performance Measures used to calculate the KPI. In developing a Performance Measurement Regime, drafters need to be aware of inter-relationships, particularly to ensure that two or more KPIs do not result in a double payment or double remedies for the same performance. One advantage of a high-level KPI like this is that it allows the Performance Measurement Regime to use only a few KPIs, yet span the end-results from many of the Services provided.

3.1.2 KPI-03 is designed to encourage availability, firstly, through the release of [Mission Systems] from deeper maintenance and other Contractor activities and, secondly, through effective Contractor support for unit-level maintenance, consistent with the agreed refurbishment, deeper maintenance and modification schedules.

3.1.3 The Contractor's performance against KPI-03 shall be calculated using the following formula:

$$\text{KPI-03 } (A_{MS}) = (\text{TF} - \text{DM} - \text{MOD} - \text{NA}_{\text{CMS}} - \text{NA}_{\text{S\&TE}} - \text{NA}_{\text{DI}}) / \text{TF} \times 100\%$$

Where:

Note: A measure such as TF allows a meaningful performance assessment process to commence while a companion acquisition contract continues to deliver systems over a lengthy delivery schedule. Even so, it remains impractical to start KPI-03 until a reasonable portion of the fleet has been delivered – which may coincide with the initial operational capability for Defence.

TF = Total Fleet size in numbers of [Mission Systems]. During ramp-up, TF commences from Acceptance of the sixth [Mission System] by the Commonwealth under the Contract (Acquisition) and increasing until Acceptance of the twelfth and final [Mission System]. For calculating

performance, the TF is only increased in the month after the Acceptance of a [Mission System] (ie, fleet size increases for a part of a month are not considered).

Note: A Performance Measure, such as DM (below), may need to be complemented by an OPM to assess the efficiency of DM activities themselves, and discourage the Contractor from building too much contingency into the DM schedule. Alternatively, a detailed resource-loaded Contract Master Schedule could be sufficient.

DM = Deeper Maintenance. DM is the number of [Mission Systems] over the time period of interest (eg, monthly) when Deeper Maintenance (DM) is being undertaken by the Contractor, including refurbishments and incorporating modifications. For example, a single [Mission System] undergoing DM for a fifteen-day period in a thirty-day month equates to a DM factor of 0.5 [Mission Systems] for that month. The time for DM commences with the delivery of a [Mission System] to the Contractor in accordance with the agreed schedule, and concludes when the Commonwealth Accepts the [Mission System] from deeper maintenance. If a [Mission System] subsequently becomes unavailable due to either incomplete or ineffective DM work, the time from the discovery of that shortfall until the time when the shortfall is fully rectified by the Contractor and the Commonwealth Accepts the rectified [Mission System] shall also be included within DM.

Note: Removing Mission Systems for modifications has similar considerations as DM; ensuring the effective use of time and minimising excessive schedule contingency. MOD could be used to account for modifications undertaken by the Contractor or other parties.

MOD = Modifications. MOD is the number of [Mission Systems] over the time period of interest (eg, monthly) when a [Mission System] is undertaking modifications by the Contractor external to the DM program. For example, three [Mission System] undergoing modifications for a ten-day period each in a thirty-day month equates to a MOD factor of 1 [Mission System] for that month. When not conducted as part of DM, the time for MOD commences with delivery of a [Mission System] to the Contractor in accordance with the agreed schedule, and concludes when the Commonwealth Accepts the [Mission System] at the completion of the modification. If a modification is installed in stages, and the [Mission System] can be scheduled to return to operational use for a period of not less than two weeks, then the commencement and conclusion dates apply to each stage of the modification.

Note: The use of a Performance Measure such as NA_{CMS} must be carefully crafted to be consistent with any KPI for Spares support. In this example, the Services in the SOW and DSD require the Contractor to keep a local warehouse (Contractor or Defence operated) suitably stocked with mission-critical components to meet the required two-hour response time. For an actual contract situation, terms such as 'urgent demand' would need to be properly defined.

NA_{CMS} = Not Available (Contractor Managed Spares). NA_{CMS} is the number of [Mission Systems] over the time period of interest (eg, monthly) when Defence is unable to perform unit maintenance on a [Mission System] due to Contractor-managed spares not being available within two hours. The period commences two hours from Defence placing an urgent demand on the Contractor for a [Mission System] spare that, in accordance with SOW Annex A, was to be held at the local warehouse, but which is not available. The period concludes with delivery of the required spare to the X warehouse or designated deployment site (where delivery time to the deployed location would be less than delivery to X warehouse).

Note: $NA_{S\&TE}$ is an example of other factors that can influence availability and which are under a Contractor's control. There are likely to be other such factors for each Contract using Performance Measures to determine availability.

$NA_{S\&TE}$ = Not Available (Support and Test Equipment (S&TE)). $NA_{S\&TE}$ is the number of [Mission Systems] over the time period of interest (eg, monthly) when Defence is unable to perform unit maintenance on a [Mission System] due to Contractor-managed S&TE at the unit maintenance facility being unserviceable or out of calibration.

Note: NA_{DI} is an example of Engineering Services affecting Maintenance and Supply. Careful consideration is needed regarding what is a reasonable timeframe to allow and to avoid the time from being used to cover other shortfalls that would result in an immediate loss of measured availability. The drafter also needs to consider Defence's role in these activities, and the timeframes involved.

NA_{DI} = Not Available (Defect Investigation). NA_{DI} is the number of [Mission Systems] over the time period of interest (eg, monthly) when a [Mission System] is not available for Defence operational use due to an on-going Defect Investigation by the Contractor. The period commences three Working Days after the Contractor become aware, or has been notified, of the Defect if all other unit-maintenance that would reasonably have been completed (notwithstanding the Defect) has been completed. The period concludes when the Contractor provides a solution (eg, temporary

concession) that is Acceptable to the Commonwealth (in meeting safety and Technical Regulatory requirements) and rendered all reasonable assistance to the Defence unit to resolve the Defect.

Note: Within this section (eg, the following clause), the drafter should identify frequency at which performance is measured, either continuously (if data collection systems allow this) or at a single or multiple set times per day. Additional detail may be required if measurement is suspended over weekends or during stand-down periods.

3.2 KPI Measurement (Core)

- 3.2.1 The parameters and measurement data used to determine the Contractor's performance against KPI-03 are to be measured [... on a continuous 24-hour a day basis / at 0900hrs local time each day]. Performance against KPI-03 shall be determined for each calendar month.
- 3.2.2 The flow chart in Figure 2 illustrates the process for measuring KPI-03 using the contributing Performance Measures, defined in this clause 3.1.

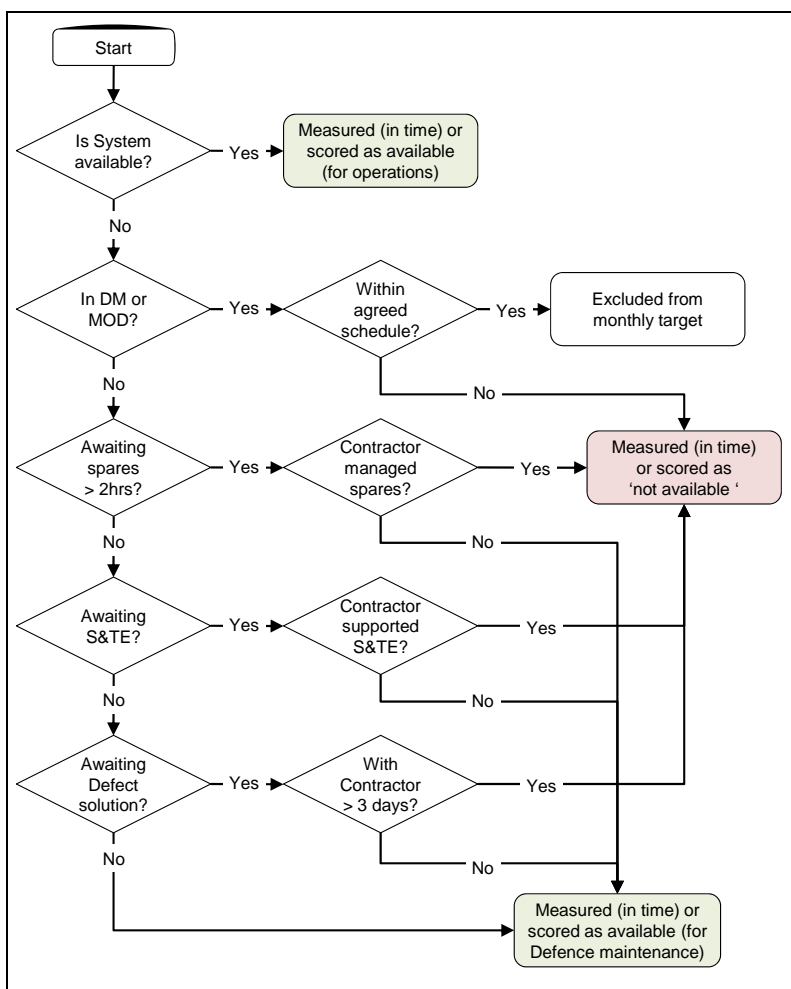


Figure 2: KPI-03 Conditional Measurement Flow Chart

Note: The preceding flowchart is for a relatively simple available / non-available decision using a few Performance Measures. Measuring availability in terms of time or by scoring at a set time each day could be used (both shown), although only one of these options could be used in practice. Refer to chapter 3 of the ASD Performance Based Contracting Handbook for an example using scoring for full, partial and not mission-capable status.

Note: As per the simple examples below, it is important to inform tenderers, the Contractor and future DMO contract managers of the limits for 'normal' application of the KPI.

- 3.2.3 For clarity, when measuring KPI-03:
- DM, NA_{CMS}, NA_{S&TE} and NA_{DI} do not include major rectifications resulting from significant and unexpected damage occurring as a result of Defence operations.
- 3.2.4 On occurrence of an event identified at clause 3.2.3, the Commonwealth Representative will notify the Contractor of changes to KPI-03.

- 3.2.5 Performance Measures, including parameters and other measurement data used to determine performance against KPI-03, shall be sourced as follows:
- a. sourced in accordance with the Contractor's Approved V&VP:
 - (i) DM_S , and
 - (ii) MOD_S ,
 - b. sourced from the XYZ Engineering Information System and when reported by unit as all other maintenance complete or delayed:
 - (i) NA_{DI} ,
 - c. sourced from MILIS and when reported by unit as all other maintenance complete or delayed:
 - (i) NA_{CMS} , and
 - (ii) $NA_{S\&TE}$.

3.3 Time-Variant Required Performance Level

Note: The new clause heading (above) and explanatory clauses, such as the following, are required to define the time-variant nature and requirement for the KPI. This example considers variation in monthly availability due to roll-out, maintenance cycles and modification programs. If these factors do not create variations in availability, then a single fixed availability target (like example KPI-01) can be specified instead of a variable monthly availability target. Also note that the formula is for the monthly performance requirement, which is different to the Required Performance Level that applies to the full Review Period.

- 3.3.1 The monthly performance requirement for KPI-03 shall be the monthly availability target (A_{MS} (target)) that is forecast for the [Mission System] fleet, where the availability target forecast is determined using the following formula:

$$A_{MS} \text{ (target)} = (TF - DM_S - MOD_S) / TF \times 100\% - 5\%$$

Where:

DM_S = DM period, as per the agreed schedule

MOD_S = Modification periods as per the agreed schedule

Note: In this case, the performance requirement is based on the formula for A_{MS} . Essentially, this example allows 5% of the available time for the Contractor in which to contain all delays for Spares, Support and Test Equipment, Defect Investigations (ie, NA_{CMS} , $NA_{S\&TE}$ and NA_{DI}) and schedule overruns for Deeper Maintenance and Modification programs that are within the Contractor's control. The figure of 5% is arbitrary and bears no relation to any real system, but is included for illustration purposes.

5% represents the time allowed for other instances of [Mission Systems] not being available for use or Defence maintenance due to NA_{CMS} , $NA_{S\&TE}$, NA_{DI} or schedule overruns for Contractor Maintenance or modification programs.

Example calculation. If, for a given month (not shown in the tables below):

TF = nine [Mission Systems]

DM involves one [Mission System] for two weeks (exiting DM) and one [Mission System] for three weeks (entering DM) = $0.5 + 0.75 = 1.25$

MOD involves one [Mission System] for three weeks = 0.75

Then, for that given month:

$$A_{MS} \text{ (target)} = (TF - DM_S - MOD_S) / TF \times 100\% - 5\%$$

$$A_{MS} \text{ (target)} = (9 - 1.25 - 0.75) / 9 \times 100\% - 5\%$$

$$A_{MS} \text{ (target)} = 72.8\%$$

Note: Tables 1 and 2 are fictitious and bear no relation to a real system and are included for illustration purposes only. Additionally, the targeted performance illustrated for this KPI does not consider reductions in demand during stand-down periods.

3.3.2 Using the formula for A_{MS} (target), the target monthly availability for financial year 2011/12 is stated in TABLE 2:

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
TF	6	6	7	7	8	8	8	9	9	10	10	11
DM _s	0	0	0	1	1	1.25	1	1	1.25	1	1	1.25
MOD _s	0	0	0	0	0	0	0.5	2	2	2	2	2
# Systems	6	6	7	6	7	6.75	6.5	6	5.75	7	7	7.75
A_{MS} (target)%	95.0	95.0	95.0	80.7	82.5	79.4	76.3	61.7	58.9	65.0	65.0	65.5

TABLE 2: Monthly Availability Target for FY 2011/12

Note: for tables such as these, for operational and budget forecasting purposes, it is often essential to have projections for a minimum of 12 months in advance. In this example, the targets for two financial years are shown, with an opportunity for updates at the third CSPR per financial year; however, the targets for FY 2012/13 would need to have been drafted by the end of FY 2010/11 (12 months before the start of the financial year). An alternative is an 18-month projection with updates every six months, ensuring 12-months forward planning at all times.

3.3.3 Table 3 shows the target monthly availability for financial year 2012/13. Table 3 is to be reviewed to update modification activities (in addition to those included within DM) at the third quarterly combined services performance review for financial year 2011/12 (ie, end April / early May).

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
TF	11	12	12	12	12	12	12	12	12	12	12	12
DM _s	1	1	1.25	1	1	1.25	1	1	1.25	1	1	1.25
MOD _s	0.5	0	0	0	0	0	0	0	0	0	0	0
# Systems	9.5	11	10.75	11	11	10.75	11	11	10.75	11	11	10.75
A_{MS} (target)%	81.4	86.7	84.6	86.7	86.7	84.6	86.7	86.7	84.6	86.7	86.7	84.6

Table 3: Monthly Availability Target for FY 2012/13

Note: Additional explanation is also required in order to explain how a time-variant KPI's Required Performance Level is determined. In this instance, it is different to the performance requirement / availability target used for planning purposes because the Required Performance Level (a contract requirement rather than an operational one) applies to the full Review Period.

3.3.4 The Required Performance Level for KPI-03 for a Review Period shall be determined as the weighted average of the monthly performance requirements (A_{MS} (target)) for each month in the Review Period (ie, each month's Required Performance Level is weighted for the number of days in the month).

For example: If, for July to September 2012, the A_{MS} (targets) are:

July (81.4% over 31 days),

August (86.7% over 31 days) and

September (84.6% over 30 days),

then:

$$\text{Required Performance Level} = (0.814 \times 31 + 0.867 \times 31 + 0.846 \times 30) / (31 + 31 + 30)$$

$$\text{Required Performance Level} = 77.49 / 92$$

$$\text{Required Performance Level} = 0.8423 \text{ or } 84.2\%$$

3.4 Achieved Performance (Core)

3.4.1 The Contractor's Achieved Performance for KPI-03 for a Review Period shall be determined as the weighted average of the results for KPI-03 (A_{MS}) determined for each month (ie, each month's results are weighted for the number of days in the month) and subject to the requirements and conditions of clause 3.1.

For example: If for July to September 2012, the KPI-03 results are:

July (80% over 31 days),
August (87% over 31 days) and
September (85% over 30 days),

then:

$$\text{Achieved Performance} = (0.80 \times 31 + 0.87 \times 31 + 0.85 \times 30) / (31 + 31 + 30)$$

$$\text{Achieved Performance} = 77.27 / 92$$

$$\text{Achieved Performance} = 0.8399 \text{ or } 84.0\%$$

Note: an alternative to the weighted average is to determine the Achieved Performance for each month – essentially the Review Period would comprise three smaller 'review periods' but for contract management purposes, the results are only reviewed every three months. While this is simpler for calculating the Achieved Performance (per month) it results in three sets of calculations for APS, instead of one, and requires further explanation if performance in different months falls in different Performance Bands (as Contract clauses are based on the Performance Band for a full Review Period, not shorter periods).

Note: A weighted average allows good performance in one month to offset poorer performance in another; however, the end result is the same as if the KPI was measured over three (3) months instead of having an operationally-driven monthly availability target.

3.5 Adjusted Performance Score

Note: The curve and calculations to obtain the Adjusted Performance Score from the Achieved Performance needs to be cognisant of the range of the Achieved Performance and the change in Required Performance Level from one Review Period to the next. In the example below (and referring to the diagram under clause 3.6 for values), the Required Performance Level must always be below 90% (the top of Performance Band IV) and above 50%. If it were feasible to have a Required Performance Level (based on A_{MS} (target)s) of less than 50%, the curve would not be correct because 80% of Required Performance Level (ie, at the bottom end of Performance Band I) would end up being less than the 40% (ie, the value at the bottom end of Performance Band II) and Performance Band II would disappear altogether. Additionally, in this example, any Achieved Performance above 90% is either considered infeasible or of no added value to Defence.

3.5.1 The Adjusted Performance Score for KPI-03 for a Review Period shall be calculated from the Achieved Performance using the formulae detailed below in Table 4, where:

'AP' is the Achieved Performance for the Review Period, in accordance with clause 3.4; and

'RPL' is the Required Performance Level for the Review Period, in accordance with clause 3.4.1).

Note / Tip: Set up a spread-sheet to calculate the formula for determining the RPL based on the user entering the three 'time-variant values' for the monthly A_{MS} (target) in a Review Period and the number days in each month. Add calculations for the AP for the Review Period by entering the results for each month (also using the days in each month). This spread-sheet could then be extended to calculate the Adjusted Performance Score from the Achieved Performance based on the formulae below. This should be tested for the feasible maximum and minimum Achieved Performance Scores. The spread-sheet can also make a useful tool for calculations required during the Contract.

If Achieved Performance for KPI-03 for the Review Period is...	the Performance Band is...	the Adjusted Performance Score (%) is calculated using the formula ...
< RPL and ≥ 80% of RPL	Performance Band I	$APS = 0.75 * (AP - 80\% \text{ of RPL}) + 85\%$
< 80% of RPL and ≥ 40%	Performance Band II	$APS = 85\% / ((80\% \text{ of RPL}) - 40\%) * (AP - 40\%)$
< 40%, 0	Performance Band III	APS = 0
≥ RPL	Performance Band IV	APS = $10\% / (90\% - RPL) * (AP - RPL) + 100\%$, and if AP. > 90%, APS = 110%

Table 4: Formulae for KPI-03 Adjusted Performance Score

For example: If, for the Review Period July to September 2012:

RPL = 84.2%, then

80% of RPL = 67.4%, and if

Achieved Performance (AP) = 84.0%

then the result is in Performance Band I (between 84.2% and 67.4%), and the Adjusted Performance Score for KPI-03 for that Review Period is:

$$APS = 0.75 * (AP - 80\% \text{ of RPL}) + 85\%$$

$$APS = 0.75 * (84.0\% - 67.4\%) + 85\%$$

$$APS = 97.5\%$$

3.6 Operation of formulae for Adjusted Performance Score – FOR INFORMATION ONLY

3.6.1 Figure 3 below illustrates the relationship between the Achieved Performance and the Adjusted Performance Score for KPI-03 and the operation of the formulae in clause 3.5.

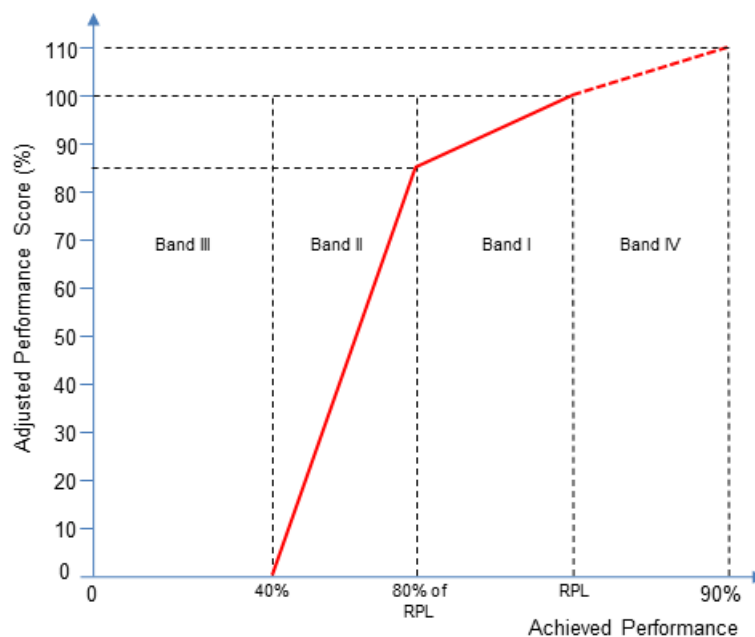


Figure 3: KPI-03 Adjusted Performance Score from Achieved Performance Curve

4 KPI-04: SUPPLY RESPONSIVENESS

Note: Supply Responsiveness used in this example is not necessarily realistic but intended to demonstrate multiple Performance Measures being used to create a single broad-based KPI. The two measures used are Demand Satisfaction Rate (DSR) and Average Wait Time (AWT) for high-priority and routine-priority demands, respectively.

DSR is the percentage of successful delivery of Repairable Items (RIs) and Non-Repairable Items (Non-RIs) against the contracted response times, as measured over a Review Period. DSR can be a KPI on its own (as per KPI-02 and the ASD PBC Handbook) and used for measuring a Contractor's Maintenance Services for RIs and Supply Services for both RIs and Non-RIs. A simple DSR has one threshold / target, which has a disadvantage in not motivating performance once the target time has passed. More useful DSRs have two targets (eg, W% delivered in X time and a further Y% delivered in a Z time) but are more difficult to represent as a single result.

AWT is an average time for delivery for all items in a group, with routine-priority demands for RIs and Non-RIs being used in this example. As an advantage, AWT captures all deliveries, but does not necessarily add priority where it is needed.

Note: Measurement data can be obtained from MILIS, which can then be used to calculate the number of demands satisfied within a specified period as a percentage of total demands, or the average waiting time. However, this may not account for delays caused by Defence involvement in the supply chain and, therefore, an accurate representation of the Contractor's performance can be hard to obtain. Removing Defence from the supply chain is a solution, but not always practical or cost effective. Considerations for data collection must be addressed when defining the KPI for a particular situation – this example isolates Defence involvement but may be more difficult to measure.

Note: Not all demands for Stock Items are the same (eg, different priorities and delivery locations) and, as a result, each contract will be different. Low numbers of demands, particularly for high-cost, high-reliability and slow-moving Stock Items, will also affect the viability of these types of Performance Measures. This example KPI, therefore, is limited by a set of assumptions that will not suit all contracts. However, as stated above, the intent is to illustrate the use of multiple related Performance Measures to create a single KPI.

4.1 KPI Explanation

4.1.1 KPI-04: Supply Responsiveness (SR) is used to evaluate the performance of the Contractor through the provision of serviceable spare Stock Items (both Repairable Items (RIs) and Non-Repairable Items (Non-RIs)) to support Defence unit-level maintenance. This KPI contributes to the required Outcome of system capability. KPI-04 is also intended to improve performance, over time, by encouraging the Contractor to optimise the Stock Items held at the various storage locations, including Defence unit's store (limited capacity), local Contractor warehouse, and more remote storage locations.

Note: The example uses only two priority levels, although there are many more for demands placed through MILIS, Defence units are only able to use a limited number of priority levels. If additional levels are required, the model can be expanded to include Performance Measures for each level. This should be done with caution, however, because too many levels will add complexity and could detract from the desired outcome if the Contractor spends too much time balancing resources for each priority level, rather than simply delivering all requested items.

4.1.2 The Contractor's performance against KPI-04 shall be determined from the weighted combination of Performance Measures for the supply of Stock Items demanded against two priority levels:

- a. DSR(high), for high-priority demands for RIs and Non-RIs; and
- b. AWT(routine) for routine-priority demands for RIs and Non-RIs;

where:

DSR is the percentage of successful deliveries of Stock Items made within the contracted delivery times, out of the total number of applicable demands placed; and

AWT is the average time taken from a demand being placed, by a Defence unit on the Contractor, until the applicable demand is satisfied.

Demands are deemed to be satisfied when:

- a. met from the Contractor-managed Stock Items held at the Defence unit store;
- b. made available to the Defence unit for collection from the X Contractor warehouse; or

- c. delivered to the Y Defence warehouse when required to satisfy demands from units deployed overseas.

Note: Details of the RPL are to be included in the table at clause 2 of Annex A of Attachment P (Outcomes and KPIs Table). For this example, the Required Performance Level is too lengthy to be described in the table and is, instead, included in the KPI description (alternatively it could be placed under its own heading).

4.1.3 The Required Performance Level for each Review Period for KPI-04 is, for:

- a. DSR(high), for high-priority demands, satisfaction rates of: 80% within three elapsed hours, and 95% within 72 elapsed hours; and
- b. AWT(routine), for routine-priority demands, an AWT of 5 Working Days.

Note: This Required Performance Level, needs to be cognisant of Contract working hours (ie, DSR(high) in particular will require warehouse access outside of normal working hours).

4.2 KPI Measurement

4.2.1 The parameters and measurement data used to determine the Contractor's performance against KPI-04 shall be measured for each demand placed by Defence under this Contract.

4.2.2 When obtaining the parameters and measurement data used to determine the Contractor's performance against KPI-04, the following conditions shall apply:

- a. the DSR level of 95% recognises that a residual number of Stock Items may be discovered to be either obsolete or require long-lead time purchases and, accordingly, the Commonwealth Representative will not provide performance relief for these Stock Items;

Note: If the Contractor were required to undertake an obsolescence watch program as part of the defined scope of work, then the following relief might not be applicable (except, perhaps, where the Commonwealth has to disposition the Contractor's recommendation in relation to any identified obsolescence issues). Alternatively, instead of being specific about this type of event, the Contract could rely on the performance relief clauses in the COC.

- b. Stock Items measured for AWT and discovered to be obsolete (and, therefore, subject to Commonwealth approval of a technical assessment of alternatives) when trying to satisfy routine-priority demands shall be excluded from the Performance Measure;
- c. the requirements are applicable to the rate of effort stated in the SOW, including planned periods of Exigency;

Note: Changes to the performance requirements during time of Contingency will be difficult to define upfront. The following clause identifies that changes may be required, but (as written) may be too open-ended for an actual contract. Notwithstanding, given that Contingency requirements are typically funded as S&Q Services, any change to the performance requirements should be factored into the price for the S&Q Services.

- d. the Commonwealth Representative will advise the Contractor of any changes in the Required Performance Levels required as a result of a Contingency;
- e. when a demand has been placed, but remains open at the end of the Review Period, the demand will be reported against:
 - (i) for AWT, in the current Review Period (as not satisfied) if the wait time exceeds eight days, and otherwise in the subsequent Review Period ; and
 - (ii) for DSR, in the current Review Period (as not satisfied) if elapsed time is greater than 72 hours, and otherwise in the subsequent Review Period;

Note: The following two conditions could also be included as 'Other Performance Measures' in Annex B. These would be used to evaluate the number of incorrect orders placed by Defence and the number of escalations occurring when routine demands are not satisfied within times that support Defence unit-level maintenance.

- f. if a demand is placed on a Defence logistics manager to supply and subsequently transfer to the Contractor to supply, the time period recorded commences once the demand has been transferred (not the time of the original demand); and
- g. where a routine-priority demand is closed without delivery of the requested item (whether replaced by a high-priority demand or cancelled), the closure shall not be counted as satisfying the initial demand and the number of such events are to be reported separately, along with the reason for closing.

4.2.3 The process defined in Figure 4 shall be used to address the conditions identified at clause 4.2.2, when determining the results for KPI-04.

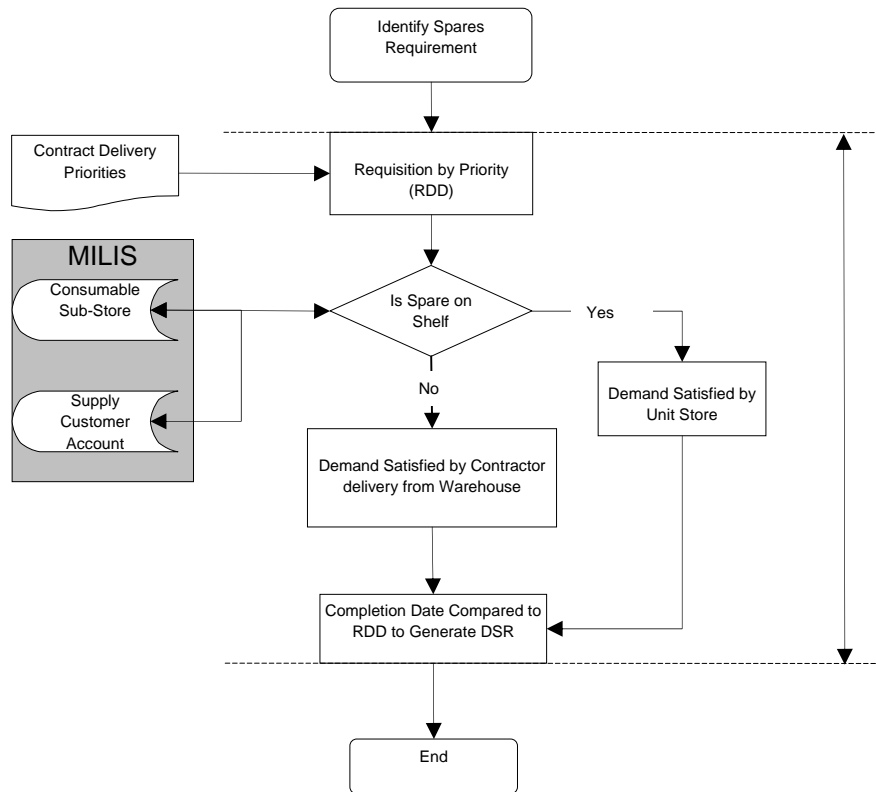


Figure 4: KPI-04 Conditional Measurement Flow Chart

4.2.4 All Performance Measures, including parameters and other measurement data used to determine performance against KPI-04, shall be collected in accordance with the Contractor's Approved V&VP.

4.3 Achieved Performance

4.3.1 The Contractor's Achieved Performance for KPI-04 for a Review Period shall be determined for the full Review Period, as calculated for the definition of the KPI, and subject to conditions within clauses 4.1 and 4.2.

4.4 Adjusted Performance Score

4.4.1 The Adjusted Performance Score for KPI-04 for a Review Period shall be determined from the combined Adjusted Performance Scores for DSR(high) and AWT(routine).

4.4.2 The Adjusted Performance Score for DSR(high) is determined from the Achieved Performance in accordance with Table 5. The DSR(high) score is found at the intersection of:

- a. the column corresponding to the percentage of demands satisfied within 3 hours (where the Achieved Performance is equal to or greater than the column heading); and
- b. the row corresponding to the percentage of demands satisfied within 72 hours (where the Achieved Performance is equal to or greater than the row heading).

Note: The relative importance for deliveries within set timeframes must be decided on a case-by-case basis. Some points to note regarding this example:

- a. **Deliveries within the short timeframe also occur within the longer timeframe; hence, the NA entries in the table, where the long term is greater than the short term percentages.**
- b. **Any performance better than the target (shown in a bold italicised font in Table 5) automatically results in 100 points.**
- c. **This KPI does not offer a Performance Incentive for Achieved Performance Scores above 100%; however, Performance Incentives could be enabled by adding scores greater than 100 into the bottom-right corner of the table.**
- d. **As high-priority demands are of greater importance, and assuming a local Contractor-managed warehouse, the emphasis is placed on 3 hours, rather than 72 hours. This is achieved by the**

bias of higher scores towards the '3-hour' axis (top) (including 97 and 100 points for all performance exceeding 85% in 3 hours and low scores for less than 70%).

- e. *Equal scores (eg, 80% in 3 hours and 80% in 72 hours) means no additional deliveries were made between 3 hours and 72 hours. This may be unlikely but possible, and would indicate poor performance on the longer delivery times.*

Note: The following look-up table uses a limited number of columns and rows to illustrate the technique; however, in an actual look-up table, more columns and rows would be required to provide greater granularity.

		DSR(high) deliveries within 3 hours					
		<70%	70%	75%	80%	85%	90%
DSR(high) deliveries within 72 hours	<75%	0	45	NA	NA	NA	NA
	75%	0	50	65	NA	NA	NA
	80%	0	55	70	85	NA	NA
	85%	20	60	75	92	97	NA
	90%	40	65	80	95	100	100
	95%	55	70	85	100	100	100
	97%	60	75	88	100	100	100
	99%	65	80	90	100	100	100

	Performance Bands I and II
	Performance Band III
	Performance Band IV
NA	Not applicable

Table 5: DSR(high) Adjusted Performance Score Determination

Note: If DSR was also used for routine demands, a similar table to Table 5 would be developed. Alternatively, if the distribution of scores is the same, the same table could be used with the labels 'DSR(routine) deliveries within 3 Working Days' and 'DSR(routine) deliveries within 10 Working Days' added to the major row and column headings.

4.4.3 The relationship between Achieved Performance and Adjusted Performance Score for AWT(routine), as a component of KPI-04, is determined in accordance with Table 6. The AWT(routine) score is found by locating the average or longer time (eg, 5.5 days is included as 6 days) from the top row and reading the percentage score from the cell below in the second row.

Note: These numbers are arbitrary and for illustration purposes only. Each Contract will require the Required Performance Levels to be defined appropriate to the system, applicable supply chain, and the price that Defence is prepared to pay for faster Service. In this example, and in order for the following look-up table to work, the Required Performance Level includes for routine-priority demands, an AWT of 5 Working Days

AWT achieved or bettered (days):	>8	8	7	6	5
Adjusted Performance Score:	0%	35%	70%	85%	100%

Table 6: AWT(routine) Adjusted Performance Score Determination

4.4.4 The Adjusted Performance Score (APS) for KPI-04 for a Review Period shall be calculated using the following formula:

Note: The following shows that, in this example KPI, the DSR(high) component has a weighting of 70%, making it more important than the AWT(routine) component of the KPI.

$$\text{APS for KPI-04} = \text{APS for DSR(high)} * 0.7 + \text{APS for AWT(routine)} * 0.3$$

Note: Given the mix of Performance Measures used, the Performance Band must also be clearly stated – this is a simple example that again reflects DSR(High) as Defence’s priority.

4.4.5 The Performance Band for KPI-04 for a Review Period shall be taken as the DSR(high) Performance Band, in accordance with Table 5.