Availability-based Payment Mechanisms for PPP Schools Projects

An overview of practice in the EU, Canada and Australasia in devising and implementing payment mechanisms in the schools sector

A Working Document of the EPEC Membership

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About this Report

The European PPP Expertise Centre (EPEC) is part of the Advisory Services of the European Investment Bank (EIB). It is an initiative that also involves the European Commission, Member States of the EU, Candidate States and certain other states. For more information about EPEC and its membership, please visit **www.eib.org/epec**.

This report is a working document of the EPEC membership. It has been prepared to facilitate the exchange of information and experiences amongst EPEC members and other PPP practitioners in the field of public-private partnerships (PPPs). As a result, the findings, analyses, interpretations and conclusions that it contains cannot be relied on.

Contents

Definitions

(Annual) unitary charge (UC)	The gross annual composite fee charged by the private partner to the contracting authority for the supply of the services required under the PPP contract; also sometimes called the 'gross availability payment'.
Availability criteria and *availability performance criteria*	The technical parameters by which a school is determined to be *available.*
availability failure	See *unavailable.*
Availability failure deduction (AFD)	An amount deducted from the UC as a result of an *availability failure event.*
Availability failure event and *unavailability event*	Any occurrence during a *monitoring period* when an element or sub-element of the school no longer meets the *availability performance criteria* and is no longer *available*.
Available and *availability*	Generally means that the school is open without any obstruction and can be used fully for its intended purpose. A wide range of definitions exist within different school PPP contracts.
Base-case of the financial model	The run of the financial model (usually included in the PPP contract) that represents the private partner's calculated project cash flow at contact award and financial close, based on the input parameters determined and fixed at that time.
Calibration	The process of determining the levels of deductions made for each type of *failure event.*
Construction completion date	The date on which all construction activities for the school have been completed. It is often, but not always, the same day as the *service availability date.*
Contract day	During the term of the contract, usually the 24 hour period starting at 24:00 and finishing at 23:59.
Contract year	The 365/366 day period starting on the first day of the contract and each anniversary.
Contracting authority	The public party that enters into the PPP contract for itself and/or on behalf of other public entities.
Cure period	A *reinstatement period*.
Demand risk	Demand risk is to be understood as the risk on actual usage of the works or services which are the object of the contract. It is one potential component of operating risk which may consist of a *demand risk* or a *supply risk* or both.
Expiry date	The final day of the contract period usually defined in the PPP contract either as a fixed date or a fixed duration (e.g. 30 years) following either the contract commencement date or the *service availability date.*

Independent certifier	A third party appointed jointly by the contracting authority and private partner in the construction phase to determine when the school meets the *availability performance criteria* and is therefore first *available*.
Indexable part of the UC	That part of the UC that is allowed to be adjusted from time-to-time using an agreed price index.
Limited availability	The school is neither fully *available* nor fully *unavailable* within the definitions of *available* and *unavailable*.
Milestone payment	A fixed payment made by the contracting authority to the private partner when a defined activity is completed, usually in connection with the construction of the school.
Monitoring period	Each period of time during the contract day as defined in the contract when *availability* (or *unavailability*) is measured and assessed.
Monthly availability payment (MAP)	A monthly payment instalment of the UC.
Multiplier	A factor applied to a base charge as part of the calculation of a failure deduction.
Non-core service	A service to be provided by the private partner under the PPP contract that is not a *core service*.
Operational phase	The period starting on the *service availability date* and ending on the *expiry date* or when the contract is terminated.
Payment period	The period for which an instalment of the UC is due to be made by the contracting authority, usually defined as a recurring monthly or 3-monthly period starting from or ending on a fixed calendar date.
Planned maintenance	Any maintenance activity that has been scheduled by the private partner in advance of carrying out the works and which has been agreed with the contracting authority, often as part of an annual or period maintenance plan.
Quality failure points (QFP)	A system of measuring performance shortfalls by assigning points to each *service performance failure event*, with the total amount of points accumulated during a payment period used to calculate a deduction from the UC.
Quarterly availability payment (QAP)	A 3-monthly payment instalment of the UC.

Ratchet	A multiplier applied to a failure deduction when the failure event continues for a number of monitoring periods or a type of failure event recurs more frequently in a defined period than allowed.
Reinstatement period and *rectification period*	The time allowed for the private partner to reinstate availability or a service following notification of a failure event (also a *cure period*).
Response period	The time allowed for the private partner to first attend at the location of a failure event once notified of the event.
Service availability date	The date on which the school first becomes *available* and on which the first payment of the UC is made.
Service failure deduction (SFD)	An amount deducted from the UC as a result of a *service performance failure event.*
Service failure event	Any time during a *monitoring period* when a service no longer meets the *service performance quality criteria*.
Supply risk	Supply risk is to be understood as the risk on the provision of the works or services which are the object of the contract, in particular the risk that the provision of the services will not match demand. It is one potential component of operating risk (i.e. the risk of exposure to the vagaries of the market) which may consist of either a demand risk or a supply risk or both.*
Technical requirements	The minimum performance parameters describing the requirements for the constructed elements and services to be provided, generally as set out in national standards for schools design and construction and as further defined or described in the PPP contract.
Unavailable, unavailability and non-availability	The school is no longer fully *available.*
Unidexable part of the UC	That part of the UC that is fixed and cannot be adjusted during the life of the contract. It often relates to the cost of the initial capital investment part of the project.
Unitary payment	The net amount payable by the contracting authority to the private partner after applying the relevant deductions to the UC.

* Directive 2014/23/EU on the Award of Concession Contracts

1. Introduction to payment arrangements in an availability-based schools PPP contract

1.1 Overview and introduction

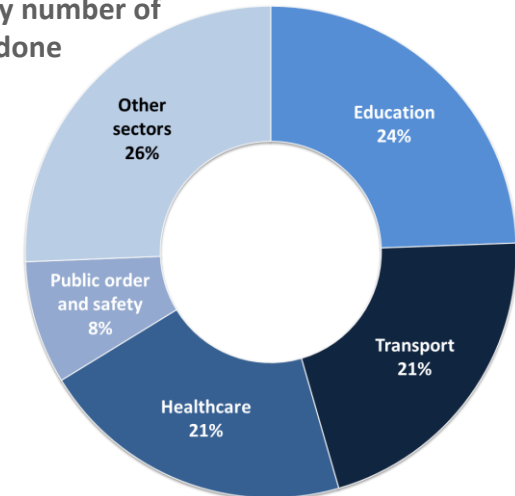**(i)   Availability-based payment mechanisms in the schools sector**

Over the past 25 years, the education market has consistently represented circa 10% of the total value of PPPs transacted in the EU. It has also been one of the most active PPP markets, representing nearly one in four PPP transactions in the EU - almost double the number of roads PPP deals - and close to half of all accommodation-based PPPs.

Most schools PPPs across Europe, Canada and Australasia use a long-term availability-based, government-pay form of contract that includes the basic support-type services needed to maintain functional accommodation for the purpose of performing academic activities (i.e. building maintenance and lifecycle management). While these basic services are broadly common across the jurisdictions, other ancillary services included can vary, e.g. cleaning and catering services and building security. Some contracts also include elective volume-based services e.g. furniture moving.

Like many types of accommodation PPP, the combined value of the service components delivered by the private partner can represent a substantial proportion of the overall contract value when compared with the total capital and lifecycle costs (up to 40% to 50%). However, the school sector has specific characteristics which need to be reflected in the structure of the contract payment mechanism.

In all the examples considered, the public sector is responsible for the delivery of the educational services.

EU Education PPP sector to 2018: by number of contracts done

Other sectors 26%
Education 24%
Public order and safety 8%
Transport 21%
Healthcare 21%

EU Education PPP sector to 2018: by value

Other sectors 17%
Environment 7%
Education 10%
Transport 54%
Healthcare 12%
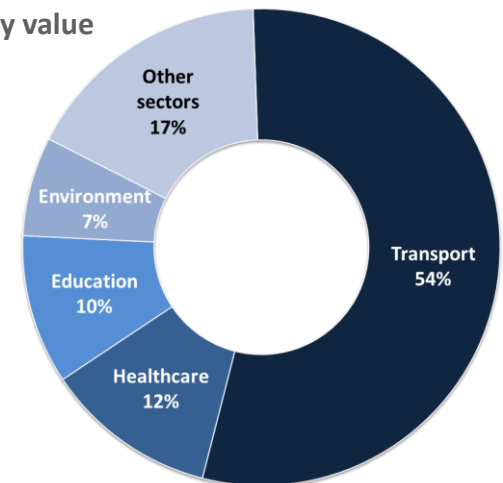
(ii) **Some characteristics commonly found the schools PPP sector**

- Maintaining service provision during defined *core periods*
  While payment within a PPP is generally made on a fixed monthly or quarterly uniform basis (the *unitary charge* or UC), the service itself is not required on either a constant 24-hour or daily basis, nor is it required at all times of the year. The predictable periods of planned non-use of the building allow for routine activities such as maintenance to be carried out. The payment mechanism therefore puts greater emphasis on the need for the private partner to maintain essential services during those periods when the primary academic activities take place (referred to as *core periods* in this report). Very limited disruption in the school's activities is tolerated during these periods, with the performance of some services (e.g. planned maintenance) prohibited. Outside of the core periods, the schedule for the performance of all other services is much more flexible.

- Maintaining service provision in key academic areas
  Most schools PPP contracts emphasise the need to keep key academic areas available for their intended use at certain times (e.g. during examination periods). Any failure by the private partner to meet these requirements leads to a significant financial deduction. Some contracts may require the private partner to provide alternative accommodation if key areas cannot be used.

- The role of the primary user in administering parts of the contract
  The daily user of service provide by the private partner is an important stakeholder, both in receiving the service and in assisting the contracting authority to manage the PPP contract. This often can include the direct administration of significant and important elements of the payment mechanism.* This needs careful consideration when devising the payment mechanism, to ensure that it can be easily and fairly interpreted and consistently applied by all actors involved, including those that may not be experienced or expert in managing commercial contracts.

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* *In many of the examples considered in this overview, the contracting authority is not the direct user of the services. To put in another way, the individual school authority is very often not the contracting authority and therefore may have no direct contractual relationship with the private partner responsible for providing the services.*

- **The payer of the unitary charge (UC)**
  Depending on the degree to which education services are locally or centrally funded, specific arrangements are often required for payment of the UC to the private partner. It is unlikely that an individual school will have the credit strength to enter into a PPP contract, with the result that either direct payment from a central public source or a form of payment guarantee will be required to make the project financeable. Care is needed to avoid overly complicated payment arrangements to the private partner.

- **Grouping (or bundling) individual schools into a single PPP contract**
  Given the relatively low capital value of an individual school facility, it is very common practice in the sector for a number of school facilities located on separate, individual sites to be grouped together (or *bundled*) into a single PPP contract. Grouping a number of facilities into a single contract raises specific issues for the payment mechanism including the possibility of a phased commencement of services (as construction of each school is completed), the possible allocation of a proportion of the UC to each school, the level of financial deductions that might be made for poor performance at each school (relative to the other schools included in the contract) or that might lead to termination of the contract.

(iii) **The right approach to take to devising a payment mechanism**

The payment mechanism underpinning the availability model in the schools sector shows a certain degree of commonality across the European and other sectors studied for this report. However, the examples show variation in almost every attribute of the payment mechanism. For example, there is no universal standard definition of availability, no standard means of calculating deductions for unavailability and service failure and disparity in the treatment of the UC itself, as either a single charge or an aggregation of individual charges.

Each example described largely reflects, in some way, local or national practices in the delivery of schools outside of the PPP sector. This often has implications for the administration and governance of the contracts that do not arise elsewhere.

The examples illustrated also often reflect the motivations and preferences of contracting authorities and their advisers. Each approach, while different, likely achieves what it is broadly expected to do, i.e. to meaningfully transfer availability risk to the private partner and restrict payment when performance levels fall short of what is required. This is achieved, however, at a cost to both parties, including time and effort to understand how the balance of risk is valued and charged as well as the resources needed to administer what are very often (and perhaps too often) complex calculation processes and extensive reporting requirements.

The right approach would seem to be one that adopts the lowest number of easily monitored and easily understood (i.e. valued) performance metrics that are assessed on a sufficient - but not too frequent - basis in a way that is readily audited and verified. In this respect, there most likely remains a significant opportunity for contracting authorities to assess the practices of others and to devise and implement simpler, better and more useable PPP payment mechanisms.

1.2 Payment for availability

(i) Payment for a service

The private partner is responsible under the PPP contract for providing services. In availability-based school PPPs, the services to be provided comprise making the school *available* to be used at the required times over the term of the contract, together with the performance of services that support the operation of the school (either directly or indirectly). The standard to which these services must be performed is specified by the contracting authority in the contract using objective and measurable criteria.

The main physical and environmental characteristics, as well as the required functionality of the educational facilities, are substantially predetermined and specified in the PPP contract by the contracting authority. These will typically include:

- the required types and number of spaces (usually rooms) dedicated to each academic function;
- the required minimum (and maximum) size of each space;
- the minimum performance level for building elements and each type of space; and
- the required service standard for the delivery of facilities management and other services.

The contracting authority will also often obtain the required or essential permits, including those that rely on environmental assessment and audit. It is also responsible for providing any supplies, equipment and furniture that are not included in the PPP contract, but which are necessary for the proper functioning of the school. In this way, the contracting authority accepts the risk for the demand or use of the school facilities and is responsible for any actual higher or lower use in the operations phase.

(ii)   The transfer of risk using the payment mechanism

The risk transferred to the private partner is to keep the school facilities *available,* i.e. safely operable for the intended use. This requirement is defined by using *availability performance criteria,* which also measure compliance. The private partner's risks therefore relate largely to the design and construction of the specified facilities, the delivery of defined services, certain operation activities (that can vary by contract) and maintenance and life-cycle activities.

The payment mechanism for a PPP contract is the commercial structure through which the private partner receives payment from the contracting authority in return for the performance of the services. It is therefore the primary means for giving effect to the operational objectives of the contracting authority and for transferring the risk to the private partner of any associated failure in achieving the required minimum level of service.

1.3 Availability risk

Availability risk as supply risk

In taking on availability risk in a school PPP, the private partner takes on many other types of risk, including meeting the costs of its own liabilities as they arise under the contract. The private partner first incurs significant early-years costs when building the school facilities. During the course of the operational phase it must then meet any liabilities for costs associated with the general and life-cycle maintenance of the facilities (such as replacing damaged or worn-out building systems equipment, re-painting walls and replacing roofing). These costs, while mostly foreseeable, are variable and not completely predictable.

Within an availability-based PPP, the private partner does not normally receive any form of compensation for these costs until the asset is first working properly and the required service is made available. It receives a generally unchanging income over a lengthy period of time (ignoring any adjustment for indexed elements or performance deductions) on commencement of the services through the contract fee. Such reimbursement is usually scheduled so that it does not fully meet the expected construction, operational and financing costs until close to the end of the contract term. This also includes the costs associated with the obligation on the private partner to return the asset in a required minimum qualitative condition, usually assessed by reference to a residual design or service life. The private partner is also expected to manage any increase in costs associated with the supply of the contract services over the term of the contract (e.g. labour and materials).

The private partner must therefore manage its resources throughout the contract term including paying its own costs whenever they are due. This managing of resources to meet foreseeable but uncertain liabilities can be considered as the transfer of *supply risk* to the private partner.

Supply risk can be managed in a PPP in a number of ways, such as through the passing of risks to sub-contractors, setting aside capital (e.g. in sinking funds or reserve accounts), pre-emptive maintenance planning, resource scheduling, product choices, the seeking and maintenance of warranties, supply chain management, etc. However, even with such arrangements, there is no guarantee that the private partner will make the financial return it plans for nor, indeed, to recover all of its investment.

The nature of these risks must be borne in mind at all times when assembling the payment mechanism that transfers them and in determining (or *calibrating*) the level of deduction made for any unavailability.

1.4 A unitary charge

(i)   The unitary charge

The *unitary charge* (UC) (sometimes also called 'gross availability payment') is the gross annual fee that is charged by the private partner under the PPP contract. It corresponds to the contract price (in nominal terms) fixed at the point of contract award and financial close of the PPP contract and defined in the *base-case of the financial model* which usually forms a part of the PPP contract. It is usual in accommodation PPPs that a part of this fee is subject to future adjustment using a defined price indexation multiplier (see below). The fee is subject to adjustment for availability/unavailability, poor service performance and other charges during the service performance period.

$$UC = UE + IE$$

Where   *UE*   = unidexable part of the UC; and
         IE   = indexable part of the UC adjusted using the pre-agreed cost index *IND* and calculated as (*UC-UE*) x *IND*

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Example calculation of a unitary charge structure (England)

$$MUC_n = \frac{(UE_m + ILE_m + INLE_m)}{12}$$

Where: MUC_n = monthly UC for contract month *n*
        UE_m = the unindexable element of the UC for contract year *m*
        ILE_m = the indexable labour element of the UC for contract year *m*
        $INLE_m$ = the indexable non-labour element of the UC for contract year *m*

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The UC is charged by the private partner to the contracting authority most commonly (but not always) in equal annual amounts (in nominal terms) spread over the contract term. The total sum of all these annual charges equals the contract price, although the actual total payment due will be the sum of the annual inflation-adjusted (real) amounts. Payment will normally start from the *service availability date* and continue to the end of the contract period (the *expiry date*). The annual UC amount is usually paid on either a monthly or quarterly basis; i.e. the *monthly availability payment* (*MAP)* or *quarterly availability payment* (*QAP)*, respectively

(ii)   Unitary nature of the payment

The principle of the availability payment is that of a single, performance-based service fee that does not distinguish between the various different activities performed by the private partner. In this respect, the UC should not be viewed as being made up of a number of discreet fee components. While this principle is widely adopted within European PPP contracts, sub-division of the fee into distinct, defined components is often adopted in PPP contracts in some European countries, the north Americas and Australasia. Some contracting authorities choose to split the annual UC fee into two fixed proportions which notionally relate to the available and service elements of the contract and against which deductions for unavailability and service performance are respectively applied. This is not however very common in the European PPP schools sector.

Further, as part of a risk-based approach to managing long-term inflation risk, most European authorities allow a defined proportion of the UC to be adjusted for inflation over the course of the contract period using an appropriate price index (see separate section on *Inflation and indexation of the UC*). The indexable part is generally related to that proportion of the fee that is not associated with the construction and finance costs within the overall UC.

Example calculation of a unitary charge structure (New Zealand)

$$QUC_n = (UE_n + IE_n) + IP_m + LP_n + EBR_n$$

Where:
- QUC_n = the quarterly unitary charge for contract quarter n
- UE_n = the unindexable part of the UC
- IE_n = indexable part of the UC adjusted using a composite of two indices (consumer price index and labour price index)
- IP_m = insurance payment for year m (based on a market test and sharing mechanism)
- LP_n = annual lifecycle payment (based on a schedule of variable payments in the contract which are indexed)
- EBR_n = base interest amount for the relevant debt contract year (calculated amount made with reference to finance costs)

(iii) The obligation to pay

The contracting authority is responsible for paying for the services on time and payment should not be withheld unreasonably. Under an availability-based PPP contract, no payment is made until the asset is ready to be used.* For green-field schools PPP contracts, the *service availability date* is when payment for the service begins, being the point when construction of the school is completed and it meets all regulatory requirements that allow it to be opened. From this date, the contracting authority is liable to the private partner for paying the UC in accordance with the payment terms set out in the contract.

For a bundled contract, there will be a service availability date for each school. All schools may have either the same operation period, say 25 years, or a common *expiry date*. There is also normally a longstop date by which service commencement must be achieved at each school and/or across the group of schools. Failure to achieve the longstop date will be a trigger for early termination of the contract.

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* *In some higher value PPP contracts, the contracting authority may decide to make interim capital payments to the private partner during the construction phase for reasons of improved affordability, VfM or bankability. See later in this section.*

Given the significance of this point in releasing payment, a formal process of inspection is used to confirm the completion of the schools and their readiness for use. In the schools PPP sector, this task is normally performed by an independent third entity appointed by the public and private partners (e.g. an *independent certifier*).** The PPP contract must define this process and the means for quickly resolving any dispute as to readiness for use.***

(iv) No service, no fee

In an availability-based PPP contract, the agreed fee is adjusted according to any reduction in the required level of service reflecting both availability and the standard of performance. The level of adjustment should reflect the severity of the reduction in service and be proportionate to the consequence(s) for the contracting authority. Thus, no service and or any shortfall in performance should lead automatically to proportionate deductions from the fee which - in the event of no availability - may mean no payment.

** *In the transport sector, it is not uncommon for the contracting authority to make this determination itself, having received satisfactory evidence of compliance from the private partner.*

*** *It should be noted that, while the contracting authority is liable for paying the fee once the certificate is issued by the third party certifier, the making of such payments does not automatically mean that the contracting authority has accepted that the school complies with all requirements of the contract. The contracting authority may dispute the certificate, but is obliged to pay even while that dispute is resolved.*

1.5 The payment mechanism and statistical (Eurostat) classification

The statistical treatment of a PPP in the EU (i.e. whether it is accounted for on or off government's balance sheet) is assessed under Eurostat's rules, and the payment mechanism is a key element of that assessment. For any contracting authority in the EU for whom the statistical treatment of a PPP is important, it is imperative to understand how the terms of the payment mechanism influence that assessment.

The assessment considers key features of the payment mechanism referred to in this report, such as:

- the structure of UC payments
- the commencement of UC payments
- defining availability/unavailability and service performance
- measuring availability and service performance
- quantifying availability failure and service performance failure deductions including: proportionality between payments and availability, rectification periods, minimum deduction amounts, ratchets and multipliers, unavailable but used provisions
- relief from deductions including: excusing causes, grace periods, tolerances/de minimis exceptions
- caps on deductions
- energy consumption risk

This report makes no further comment or recommendation regarding the interaction between the payment mechanism and the statistical treatment under Eurostat's rules. Readers should bear in mind that some of the approaches referred to in this report are taken from projects for which Eurostat treatment was not considered relevant and from jurisdictions outside of the EU.

A detailed commentary on the potential impact of the payment mechanism on the statistical classification of PPPs is provided in the joint Eurostat/EPEC document **_A guide to the Statistical Treatment of PPPs (2016)._**

1.6 Typical elements of an availability-based payment mechanism

The actual amount to be paid by the contracting authority in any given contract *payment period* (e.g. monthly or quarterly) is determined by the payment mechanism. This is set out in a separate and detailed technical annex to the PPP contract. This document describes, in a precise way, the method of calculation to be used by the private partner to determine the payment due, taking account of any performance shortfalls. The most common forms of availability-based payment mechanisms in the schools sector adopt the following principles:

- The *contract day* is divided into a series of *monitoring periods* (usually two), with a number of contract days in a *contract year* that reflects the days when the schools is to be used for academic activities (typically around 190 days);

- The school is divided into spaces or groups of spaces (indoor and outdoor) each of which have defined functions, e.g. general classroom, chemistry teaching space, gymnasium, canteen, sports pitch, administration space, facilities management/utility spaces;

- Availability/unavailability is tested and reported for each monitoring period for each defined space or group of spaces;

- Deductions are made from the UC for any *availability failure events* (i.e. unavailability) and any *service failure events* that occur during the payment period (*availability failure deduction* or AFD*; and service failure deduction* or SFD);

- The amount deducted for any given failure event will vary according to operational priorities determined by the contracting authority to reflect the importance of keeping the availability of each space and the associated services. The *availability failure deduction* is calculated either by reference to a schedule of fixed charges (expressed as a monetary amount) or by using multiplying factors (*multipliers*) to a base charge. Multiplier(s) used will relate, for example, to when the event occurs, for how long, the amount of space affected, the relative importance of the function of the space (or group of spaces) and any relief from deduction that may available;

- Some contracting authorities (e.g. Austria, Germany) split the UC into separate components: one for availability and the other for services;

- A few contracting authorities include a bonus payment mechanism (often linked to end users' satisfaction or to consistent high performance or outperformance of contractual standards); and

- Contracts sometimes set a maximum limit on the total deductions (either AFD, SFD or both) that can be made either in a payment period or annually, which amount may also be limited by the proportion of any notional split in the fee.

1.7 Introduction to the payment calculation

The calculation of the amount to be paid by the contracting authority is typically described using mathematical formulae incorporating various defined components. Some of these components will be directly measured inputs reflecting the performance standard achieved, while others require the manipulation of data in separate calculations.

The *unitary payment* is the net amount payable by the contracting authority to the private partner after applying the relevant adjustments as arise under the contract for availability/unavailability, service performance and other charges.*

Payment adjustments may include:

- Deductions for any *availability failure events (availability failure deductions or AFD)*
- Deductions for any *service performance failures (service failure deductions or SFD)*
- Indexation of part(s) of the UP using a defined price indexation multiplier(s) (*IND*)
- Charges made for additional services or items consumed on a volume basis
- In a bundled contract, the respective proportion of the fee related to a completed school
- Utilities costs
- Energy performance savings (or losses)
- Performance bonus
- Eligible insurance cost changes
- Refinancing gains (e.g. Australasia)

A typical unitary payment calculation formula

$$UP = \{UC - [(AFD + SFD) \times (IND)] + (Volume\ related\ charges)\}$$

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*   *Note: not all contractual payments are calculated in accordance with the payment mechanism; for example amounts due for variations or compensation events.*

1.8 Timing of payments

(i)   Payments made prior to the operational phase

Availability payments made by the contracting authority normally begin once the *service availability date* is achieved. This incentivises the private partner to complete all construction works as early as possible in order to start performing the services, receiving its fee and repaying its loans (thereby minimising its financing and operating costs). However, on some PPPs, the contracting authority can benefit from making some forms of payment earlier than the service availability date. The most common forms of such payment are:

- **Phased availability payments** made in respect of schools that form part of a bundled contract and that are completed earlier than other schools in the same bundle and that are therefore available to be used; and

- **Fixed, lump-sum, milestone payments** made in respect of the achievement of certain activities in the construction phase but which are not be linked to the availability of a school(s). It should be noted that milestone payments linked to construction activities reduce the amount that remains to be paid in the operational phase. This will affect the level of deductions that can be made for availability failure events and the total amount that can be deducted for no availability.

(ii)   Phased availability payments based on a phased delivery programme

In the case of phased availability payments, a partial payment of the UC may be made before all the schools in the bundle are completed and available. A reduced amount is paid that is normally proportional to the construction value of the completed school(s), although a portion of the fee may be held back until all schools are complete (e.g. 20% of the total UC). The payment increases gradually and in a stepped-manner as each school in the bundle is delivered until all construction is complete and the payment reaches the full amount of the UC.

(iii) **Fixed, lump-sum, milestone payments**

In some contracts, one or more payments in the form of an agreed fixed amount is made to the private partner by the contracting authority, either during the construction period or immediately after the *construction completion date* (or both). Such payments may, or may not, be related to the achievement of the completion of phases of the works that allow some schools to be opened earlier than others for use (and so become *available*).

Typical reasons for making such payments include:

- disbursement of monies granted from another budget holder available as lump-sum capital payments, e.g. a grant;
- reducing the amount of private finance required and therefore the cost of finance and so potentially improving VfM, affordability or bankability; and
- reducing the amount to be borrowed by the private partner for the construction and so improving its cash flow, participation rates by other tenderers and/or VfM.

PPP projects that incorporate milestone payments tend to be higher-value projects and/or which incorporate a strategic, high-risk component such as significant works to prepare sites for use (e.g. a new road connecting the school to the road network).

(iv) **Risks associated with early payments**

While reducing the amount of private finance required by the private partner may improve both VfM and long-term affordability for the contracting authority, a sufficiently large early payment may also have the effect of reducing the incentive of the private partner to perform, as the outstanding liabilities of the private partner are reduced on a commensurate basis (including the value of its own investment that is at risk). Accommodation PPPs with a relatively high service component are particularly at risk from potential dilution of the incentive to perform.

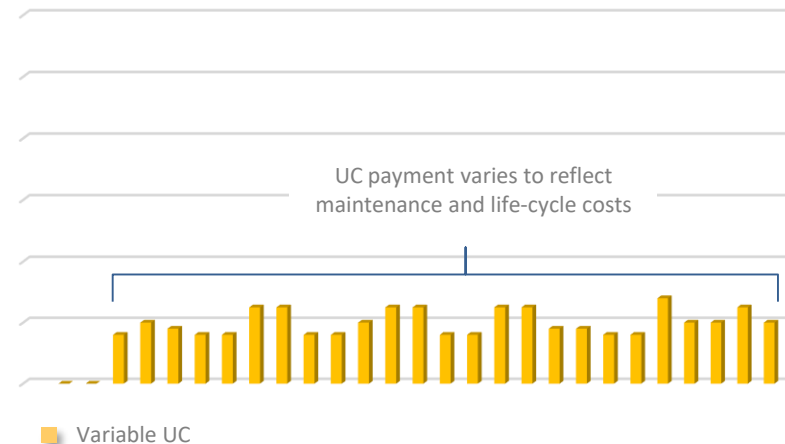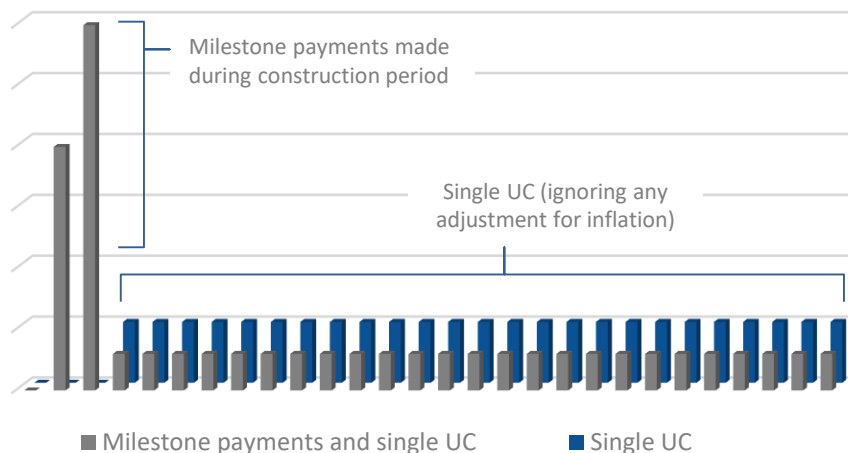However, in the case of larger PPP projects, it is possible that the financing of even a partially reduced project value will retain a sufficient incentive for performance by the private partner. The contracting authority should carefully assess (e.g. through market soundings) what the limit might be for each project, taking into account the risk profile and the value of the services to be provided over the contract period.

1.9 Varying the payment over the contract term

Other than for price indexation changes or to ensure consistency with project phasing, it is generally not appropriate to vary the UC through an uneven or irregular payment profile. Such an approach is contrary to the principle of a unitary payment for services and risks the payment regime being more closely aligned with actual costs, undermining the transfer of supply risk.

Profiling the maintenance service costs is commonly adopted in the north Americas and Australasia, with the UC split into separate identifiable components relating to these activities and with pre-defined (but variable) fees. Some contracts also include the option for the parties to agree to vary the timing of specific maintenance interventions in the future and, with it, the payment profile.

A small number of European contracting authorities have adopted a variable UC (particularly in the transport sector). Primarily it is used in response to life-cycle maintenance demands targeted, in particular, when disproportionately significant maintenance interventions are planned (i.e. allowing a marked, but limited step-up in payments). Alternatively, the profile has been varied to reflect periods where life-cycle or maintenance activities are expected to be disproportionately low and/or to match the debt amortization profile, for example in the final years of the contract (i.e. a general step-down in payments).

Milestone payments made during construction period

Single UC (ignoring any adjustment for inflation)

UC payment varies to reflect maintenance and life-cycle costs

■ Milestone payments and single UC   ■ Single UC

■ Variable UC

Risks associated with varying the payment profile

As has been said, the approaches described will likely improve affordability, but does so in a way that may reduce the supply risk transferred under the availability regime. The uneven payment profile (either by way of augmented payments or abatement of the payment adjustment regime) will inevitably more closely reflect the cost liabilities of the private partner in a way that the fixed unitary payment does not.

Consideration must also be given in such circumstances to the proportion of each different annual UC that is at risk from deductions for failure events and the amount that can be deducted in the event of no availability. There are likely to be difficulties and/or complications where the profile varies markedly from one period to the next as a fixed AFD or SFD will have a proportionately different impact relative to a varying UC.

To recap: the availability payment is, in principle, a fee for providing a service, not a reimbursement of costs incurred by the private partner. Consequently, it is advised not to split the fee into component parts, so it is advisable not to mimic a split fee arrangement by using a profiled payment schedule or suspending AFDs for defined (but markedly varying) periods.

*   *Rather than adjust the actual payment profile (and related amounts), a number of contracting authorities in the transport sector have instead allowed the private partner to identify and quantify a limited number of varying periods within a contract year (and within the contract as a whole) during which time AFDs are not applied for reasons of performing planned maintenance. The total amount of time that AFDs are avoidable is capped. While not actually modifying the payment profile, this approach has the effect of reducing the risk of deductions to the UC (so giving more certainty to the expected cash flow) at times when input costs are higher. The characteristics of a schools PPP contract is such that this type of arrangement – offering windows of time that have no deductions – is naturally embedded into the contract structure by way of the cycle of the school year owing to extended vacation periods and low or no-use at weekends and during the night.*

1.10 Inflation and indexation of the UC

The private partner will want to protect itself against general and specific price increases during the contract period that could result in the UC not matching its operating costs and financing obligations and not providing its expected return on investment. Some judgement can be made on the likely near-term rate of inflation, with affordable hedging strategies available to mitigate the risk, especially during the relatively short construction phase. Accordingly, it is usual to transfer this short-term pricing risk to the private partner.

To mitigate the more uncertain medium to long-term risk in the operations phase, the contracting authority will generally offer to share the inflation risk. The proportion of the UC that is used to meet the cost of delivering support services (which often mostly comprise labour costs) can be significant. The payment mechanism will therefore include an arrangement that allows for that part of the UC not associated with the construction phase to be adjusted in line with an inflation-linked price index. If there is no such mechanism, the private partner is likely to have to include a significant contingency in its contract price to meet future inflation costs. Since this pricing risk is outside the control of the private partner, such an approach is very unlikely to be either affordable or VfM for the contracting authority.

Example of quarterly unitary charge indexation (Australia)

The quarterly unitary charge is adjusted by applying the *consumer price index (CPI)* and the *labour price index (LPI)* to defined components of the fee, in addition to the benchmark pricing adjustment of certain reviewable service components:

$$QUCq = (NRSV1_q + RSV1_q) \times CPI + (NRSV2_q + RSV2_q) \times LPI$$

Where in quarter *q*:

QUC_q	= the quarterly UC
$NRSV1_q$	= the non-reviewable component of the quarterly service fee to be indexed to *CPI*
$RSV1_q$	= the reviewable component of the quarterly service fee to be indexed to *CPI*
$NRSV2_q$	= the non-reviewable component of the quarterly service fee to be indexed to *LPI*
$RSV2_q$	= the reviewable component of the quarterly service fee to be indexed to *LPI*

The contracting authority should devise its approach to managing inflation risk at an early stage of project preparation phase. A draft payment mechanism that specifies the price index to be applied and how it will be used should form part of the tender documents. The contracting authority may allow individual tenderers to specify the percentage of the UC to be indexed such that the proportion set is at a level appropriate to its bid. The contracting authority should, however, stipulate the index to be used.

Typical indices used are the *harmonised consumer price index* (HCPI) and *retail price index* (RPI) published on a regular basis by national statistical offices and Eurostat. Other, sector-specific indices may be more appropriate (if available), such as for construction costs (related to maintenance activities) or different service-related activities (e.g. cleaning or security services). Any index selected should be available in the long term and be produced independently, preferably by a public body. These indices might be used as part of a composite index used as a multiplier as part of the calculation of the UC.

Example of unitary charge indexation (Germany)

Those parts of the UC that correspond to the performance of different services are indexed using separate official indices available in the country (e.g. construction price index, labour price index, consumer price index) and that are specific to the industries and products involved in the performance of the services. For example:

- 90% of that part of the UC that corresponds to maintenance and cleaning services is indexed using a labour price index (relevant to the specific industries involved in the performance of the services), with the remaining 10% being indexed to a consumer price index.

- 50% of that part of the UC that corresponds to the provision of security service is indexed using a specific consumer price index related to security services for building facilities, with the remaining 50% being indexed to a consumer price index for general types of security services.

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2. Availability concepts in schools PPPs

2.1 Availability and unavailability: general principles

The level of service provided for a school relates to the amount of space (of suitable quality) made available to the intended users (i.e. pupils, staff and visitors) and to how well the facilities management and other services are performed. An acceptable standard of service provides the users with safe and functional facilities.

Inherent in the investment of a new school is the provision of a physical asset of sufficient quality and the management of that asset so that it can be used safely for its intended purpose. For an availability-based schools PPP:

- the usable elements that make up the project are precisely defined and listed in the contract. This will essentially comprise the indoor and outdoor spaces or groups of spaces;

- the contract provides a description of the minimum physical and environmental requirements (or performance criteria) needed for each element to be used safely for its intended purpose. When these criteria are satisfied, the element is considered *available* for use;

- when, due to the performance of the private partner, the physical and environmental requirements are not met, the element is considered to be no longer *available* for its planned use (i.e. not all the minimum physical and environmental requirements are present). This can be considered an *availability failure event*;

- an *availability failure event* is a time-limited event, starting from the point when failure occurred and ending when it is corrected. During this period the element is considered *unavailable* and an *availability failure deduction (AFD)* is made from the UC; and

- within any given monitoring period, the *availability* of the project as a whole is measured as the sum of the available elements.

2.2 Defining availability/unavailability

The PPP contract will provide a definition of what is meant by the school being either *available* or *unavailable* for the use for which it has been designed and constructed, including the minimum requirements or criteria.

The precise definition of either *availability* or *unavailability** is essential to the basis of the payment mechanism and to an understanding of the service delivery requirements. One of two approaches is generally used:

Approach 1   Define *availability* using availability criteria**:** the contract specifies fixed criteria that must be met in order for the space or group of spaces to be considered available. Failure to meet any one of the criteria creates unavailability and an *availability failure event*.

Approach 2   Define *unavailability* using unavailability criteria: the contract specifies certain fixed criteria which, if found to exist, cause the space or group of spaces to be unavailable. Any circumstances that meet one of these defined criteria creates unavailability and an *availability failure event*.

The approach taken in the contract will determine the monitoring and assessment methods used by the contracting authority to determining eligibility for payment. An examination of current practice suggests that contracting authorities generally choose to define conditions of *unavailability**.

A third potential approach might be used:

Approach 3   Define both *availability* and *unavailability* and add a condition of *limited availability*: when measured against certain fixed criteria, there exist certain circumstances in which the space or group of spaces does not meet the conditions for being available, but which do not cause the space or group of spaces to be fully unavailable. The space or group of spaces is/are therefore considered to have *limited availability* and a reduced deduction is made UNLESS, when measured against certain additional fixed criteria, there exist the conditions which cause the space or group of spaces to be unavailable and a full deduction is made.

*   *The terms availability failure and inaccessible are also sometimes used in school PPP contracts to mean unavailability.*

Example: defining availability

The *availability* of a space, a group of spaces or the whole facility, is determined when a minimum set of defined *availability criteria* are met. These criteria typically reflect clear, measurable environmental and physical conditions set out in the contract e.g.:

- *Availability* means that a comprehensive set of minimum requirements is satisfied for a range of quantitative and qualitative environmental and physical conditions that are defined for each space, including both general and specific aspects that must be present (e.g. building elements, power) or absent (e.g. flood or matters that preclude safe occupation of the space or adversely affect the services or long-term condition of the facility).

- *Availability* of a school is considered when:

  (a) all components and areas of the school:

    - have been designed and constructed in accordance with the project requirements;

    - comply with the technical requirements and are functioning as designed and do not adversely impact the occupation and use of the school or the delivery of the educational services; and

    - satisfy the accessibility criteria;

  (b) all conditions of all permits have been satisfied and required records, manuals, authorisations and inspection are in place;

  (c) the school site and the school have been cleaned as required by the technical requirements;

  (d) all utility services have been transferred to the contracting authority;

  (e) the maintenance plan, the emergency response plan and the security clearance process for the school are in place;

  (f) insurance policies required are in place and in compliance with the contract; and

  (g) change-over of locks is complete and keys to the school have been provided to the contracting authority.

<u>Examples of physical and environmental features used in defining availability criteria</u>

- Temperature maintained within specified maximum and minimum limits

- Lighting intensity maintained within specified maximum and minimum levels measured at defined levels (e.g. on desk)

- Hot, cold and potable water maintained within quality standards

- Safe power supply

- Continuous and safe supply of other utilities

- Communication and IT systems functioning at minimum traffic capacity with service standards (no interruption)

- Weather-tightness standards

- Sanitary facilities supplied with consumables

- External spaces free of standing water/ice/snow

- Functional and useable furniture and equipment (*where provided by the private partner*)

- Playable sports fields with line markings and fixed equipment

- Facilities free from infestation of vermin or pests

Example (a): defining unavailability

An alternative approach may be to consider a space is *unavailable* if, for example:

- it cannot serve the function for which it is intended without being prescriptive as to the cause (e.g. cannot prepare a meal in the kitchen);

- if a non-defined defect renders a space "*inaccessible, endangers users or causes excessive nuisance*"; or

- the parameters defining a the environmental conditions in a space lie outside a defined range for longer than a defined period (e.g. excessive temperature or insufficient lighting levels persist for more than a specified number of hours).

Example definitions of unavailability:

- Unavailability is considered to occur when one or more of six criteria which, if not met, would preclude the space from being used for its intended used:

    - the use of the room/space is prohibited by the authorities or there is no permit-for-use;
    - the use of a room/space is not possible or substantially restricted for reasons of safety;
    - the function/purpose of a room/space is substantially restricted;
    - the specified room temperature is significantly outside the required limits;
    - there is no or a substantially reduced supply of water to a space that requires a supply; and
    - there is no or a substantially restricted supply of power to a space that requires a supply.

- Unavailability is considered when one or more defined space related non-performance criteria (each leading to specified unavailability deductions) is /are met.

Example (b): defining unavailability

Unavailability is considered to occur when an *availability failure* occurs which is a *failure event* that fails to achieve the minimum standard based on the criteria specified below.

Availability failure means a *failure event* which:

a)   prevents a user from entering, occupying, using or leaving a space safely and conveniently and using normal access routes;

b)   prevents or materially impacts on the proper use and reasonable enjoyment of a space;

c)   is a failure event categorised as being of high importance as defined in the contract; or

d)   fails to achieve the minimum standard for a facility as specified in the contract in respect of:

   i.   temperature;
   ii.   lighting levels;
   iii.   hot and cold potable water;
   iv.   provision of safe power supply;
   v.   continuous and safe utilities (electricity, gas, water, sewage);
   vi.   communication systems including ICT infrastructure, telephone and public address (excluding equipment supplied and maintained by the contracting authority);
   vii.   wind/air and water tightness;
   viii.   functional and useable sanitary facilities that are appropriately supplied with consumables;
   ix.   external spaces free of standing water;
   x.   functional and useable furniture and equipment;
   xi.   playable sports fields with appropriate line markings; or
   xii.   being free from infestation of vermin or pests.

2.3 Other common availability/unavailability concepts

(i)   Unavailable but used

The concept of *unavailable but used* is widely adopted in the schools PPP sector. It describes an event in which a condition of unavailability arises (due to a non-performance with the required standards) but in which the space also continues to be used according to the choice of the user at that time. In this circumstance, the availability failure deduction that is applied is generally abated or reduced for the period that the unavailable space continues to used by the user, typically to 50% of the full AFD. The decision by the user to continue to use a space - even though the availability criteria are no longer met - is often based on the contracting authority's preference to avoid any non-material disruption to the core academic activities. In situations where the unavailability but used condition persists for longer than one or more monitoring periods, the contract may provide for a full deduction to be applied (including retroactively).

(ii)   Available but not used

This concept has been exceptionally adopted in some projects in Australia whereby a *non-use rebate* is made in favour of the contracting authority for spaces that are available to be used, but that the contracting authority chooses not to use. Prior notice is required of any planned non-use and certain services must continue to be provided (e.g. pest control, building management, help desk and security services). The *non-use rebate* is calculated using a cost reduction factor applied to the UC (see Section 3).

(iii)   Consequential unavailability

This concept foresees the circumstance that a space that is otherwise technically available cannot be used because of the unavailability of a separate space to which it is functionally linked. For example, classrooms that meet the availability criteria cannot be used (and therefore become *unavailabl*e) because the space that provides access to them is unavailable (e.g. a flooded corridor).

(iv) Whole school unavailability

Whole school unavailability will normally trigger the deduction of the full UC for the payment period affected (e.g. a school day) and generally arises when the total number of spaces that are unavailable at any one time in the payment period(s) exceeds a defined threshold. Typically the threshold is less than 100% of the spaces and is defined by reference to a proportion either of all spaces being unavailable (e.g. exceeds 50% of all spaces) or the unavailability of all or a proportion of certain key spaces (e.g. 50% of toilets).

In most circumstances, the deduction amount triggered is equivalent to as if all the spaces in the school are unavailable, even if some parts of the school are technically *available* and can continue to be used, i.e. there is no abatement of the AFD where the whole school is *unavailable but used*.

<div style="border:1px solid #1F4E79;">

<u>Examples of whole school unavailablility thresholds</u>

- *30% of the gross floor area is unavailable; or 25% of the school academic area is unavailable; or 30% of the toilets are unavailable (UK).*

- *50% of the facility gross floor area is unavailable; or if 50% of the toilets are unavailable (Ireland).*

- *40% of educational areas with a high functional rating is unavailable; or if 65% of all toilets are unavailable (Australia)*

- *35% of the school academic area is unavailable; or if 65% of the toilets are unavailable (Canada).*

</div>

(v)   The provision of alternative accommodation where unavailability occurs

Some contracts (e.g. Belgium, Australia, UK) allow the private partner to provide alternative accommodation when a critical space becomes unavailable or is unavailable at a critical time. Depending on the circumstances, the contract may allow for the alternative space to be located within the same facility (usually in the form of temporary accommodation) or at a different facility*. However, the contracting authority is generally not obliged to accept alternative proposals (acting reasonably). Such an arrangement can mitigate the impact of any disruption of a failure event to key academic activities (e.g. as a result of the unavailability of an examination hall) or, say, to the general education service such as may be caused by an extended period of unavailability (e.g. lengthy building or other repairs that might necessitate evacuation of a building). Although AFDs may be applied for the unavailable spaces, most contracts provide relief from either all or a part of the deduction amount, depending on the criticality of the function and or the duration of the period of unavailability (see below also *whole school unavailability*).

*   *This may require the private partner to provide transport from the school to the alternative site.*

2.4 Availability/unavailability: when is a space available?

Approach 1: define **Availability**

If all the criteria that define *availability* are met, then the space is considered as *available* and no deduction is made: **the space is available** … OTHERWISE →	… the space is considered as *unavailable* and a deduction is made: **the space is unavailable** … UNLESS →	… the space continues to be used in which case a reduced deduction is made: **the space is unavailable but used**

Approach 2: define **Unavailability**

The space is considered *available* and no deduction is made: **the space is available** … UNLESS →	… any criterion that defines *unavailability* is met and the space is considered *unavailable* and a deduction is made: **the space is unavailable** … UNLESS →	… the space continues to be used in which case a reduced deduction is made: **the space is unavailable but used**

Approach 3: define **both Availability and Unavailability**

If all the criteria that define *availability* are met, then the space is considered as *available* and no deduction is made: **the space is available** … OTHERWISE →	… if the requirements are not met then the space is considered to have *limited availability* and a deduction is made: **The space has limited availability** … UNLESS EITHER ↓ … OR →	… any criterion that defines *unavailability* is met, in which case the space is considered *unavailable* and a further deduction is made: **The space is Unavailable** … UNLESS↓
	… the space continues to be used in which case a reduced deduction is made:	
	The space has limited availability but is used	**The space is unavailable but used**

3. Calculating deductions for availability failure events

3.1 Calibration of the payment mechanism

Calibration of the payment mechanism is a pre-tender process, performed by the contracting authority, that forecasts the financial impact of the proposed availability and service failure deductions on the UC in different scenarios of private partner performance. It includes consideration of circumstances ranging from moderately poor performance through to complete unavailability. The calibration exercise is critical to ensuring that adjustments made to the UC using AFDs and SFDs fairly incentivise the private partner to keep the school facilities available and deliver the services to the required standard, but without being overly penal.

Calibration of the payment mechanism should consider:

- the service level requirements that define the quality of service to be provided and the contracting authority's operational priorities for the delivery of the services;

- operational priorities in keeping the different spaces in the school available (e.g. reflecting functional importance or times of the day or year for core academic activities); and

- levels of performance that would be considered as unacceptable and that could give rise to a termination event under the contract; for example, a prolonged period of persistent, poor performance or a sustained period of complete unavailability.

A well-calibrated payment mechanism will avoid setting AFDs and SFDs at such a high level high that the private partner increases it tender price to offset the risk of high deductions in a 'normal' operating environment or that could make the project 'unbankable' due to the risk of unsustainably high deductions. It needs to be well balanced across all areas of service delivery and avoid perverse incentives or unintended consequences.*

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*   *For example, the contract should protect against so-called 'hair trigger events', where a relatively minor event causes disproportionately high deductions. Similarly, it should avoid the possibility of high levels of deduction accumulating rapidly, without sufficient time allowed to intervene and fix the problem.*

The calibration may take the approach that the total level of deductions in a payment period cannot exceed 100% of the corresponding UC. This approach serves to calibrate the AFDs and SFDs in a proportionate way, but may lead to low deduction amounts if the number of defined failure events is large. In some cases this can lead the contracting authority to specify minimum amounts for AFDs and SFDs (i.e. the AFD or SFD applied will be the higher of (i) the calculated deduction amount and (ii) the specified minimum deduction). The ratio of total potential deduction to the UC is a key attribute for accommodation-based PPPs where the service component is proportionately high (compared to the cost of construction).

An alternative approach is to set the value of AFDs and SFDs at a level that somewhat reflects the expected financial loss to the contracting authority of the particular event. In this case it is important to ensure that value of accumulated deductions does not become disproportionate to the UC (as discussed above).

3.2 Using multipliers to define priorities in availability

The impact of an availability failure event on the functioning of the school will depend on which space is affected, how much of the space is affected, when it happens and for how long. Most payment mechanisms reflect this variation of impact by making an adjustment to the UC using multiplying factors (or multipliers) of different values depending on the severity of the failure event.

- **Space priority multipliers**

  Space priority multipliers relate to the type of space affected by an availability failure event and how much of the space is affected. The multiplying factor will reflect the importance of the space to the academic function and the need to have the space accessible.

- **Critical academic function multiplier**

  A *critical academic function multiplier* is sometimes used to increase AFDs when a defined academic function is adversely affected by unavailability (e.g. the inability to hold national examinations in a sports hall is of more significance than the inability to hold a gymnastics class). The actual multiplier applied may vary and relate to the number of pupils affected rather than to the space type.

- **Time multipliers**

  Time multipliers relate to when an availability failure event happens (i.e. time of the day, week, or year) and/or for how long it lasts. The value of the multiplying factor will reflect, for example, the disruption likely to be caused to the school's activities during the core periods (e.g. weekdays from 8:00 and 16:00 or during a semester) or to non-academic activities outside of the core period. For this reason, availability is monitored during discreet, consecutive time periods.

- **Failure event category multipliers**

  Failure event category multipliers relate to the severity of the consequences that may be caused by the failure event, e.g. a failure in the life safety systems or the IT network may have more serious consequences than a failure in the daily cleaning routine. The multiplier assigned to the category of failure may also vary depending on the importance of the space (for example, failure of the IT network has a higher impact in teaching spaces than in a toilet block). The severity of the impact will generally also be reflected in the time allowed to respond to and rectify the failure e.g. on an urgent, medium or low priority basis.

- **Repeated failure event multiplier or 'ratchet'**

  A multiplier is sometimes applied when the failure event to which the AFD relates continues for more than a defined number of monitoring periods or recurs within a certain defined period of time of the original failure event.

Various examples of these multipliers are provided in the following pages.

Example of using space weightings (space multiplier)

Some payment mechanisms use space weightings as the main calibration factor in calculating availability failure deductions. In the example shown below, spaces in a school are assigned a *weighting factor* based on their relative functional importance. Spaces such as classrooms and toilets are attributed the highest weighting factors, which reinforces the fact that their availability is critical to the school's main functions. Knowing the weighting factors and the number of spaces belonging to each space-type, it is possible to calculate the *space-type weightings*. Space-type weightings are usually used in the calculation of *space tariffs* (e.g. the UC is multiplied by the space-type weightings to obtain the portion of UC allocated to each space-type).

Type of space	Weighting factor (points)	No. of spaces	Total points all spaces	Space-type weighting (whole school)
Primary classroom	8	4	32	18%
Lower classroom	5	9	45	25%
Secretariat	5	3	15	8%
Play room/multi-purpose	1	1	1	1%
Canteen	1	1	1	1%
Kitchen	5	1	5	3%
Exercise room	1	1	1	1%
Showers	5	2	10	6%
Toilets	10	6	60	34%
Archive	1	3	3	2%
Technical spaces/circulation	5	1	5	2%
Total			**178**	**100%**

Example of using a space priority scale (space multiplier)

An alternative to space weightings is to use a *space priority scale* which assigns different priorities to different types of spaces in the school. Usually priority scales include *high*, *medium* and *low* as values. Priorities are allocated to reflect the relative functional importance of spaces, using a similar rationale as space weighting factors (e.g. spaces such as classroom and toilets are considered *high* priority). In practice, space priority scales are used in combination with failure event category multipliers to derive deductions applicable to availability failure events occurring in a space of a certain priority.

Example of using space priority scale from **Australia**:

Type of space	Priority
Design studio	High
First aid room	High
Classroom	High
Toilets	High
Library area	Medium
Canteen	Medium
Technical space	Low
Car parking	Low

Example of using a space priority multipliers

The use of *space priority multipliers* is another way in which the relative functional importance of spaces in a school can be taken into account when calculating availability failure deductions. There are different examples of payment mechanisms using space priority multipliers, their main commonality being to sort spaces into categories depending on the functional importance of the spaces (similar to the space priority scale). The multipliers (positive integer or fractional numbers) provide a way to apply the principle of space calibration in calculating availability failure deductions.

Example of using space priority multipliers from **Austria:**

Space category	Space priority multiplier
Category 1	1.25
Category 2	0.5
Category 3	0.2

Example of using space priority multipliers from **Germany:**

| Space category	Space priority multiplier
Category 1	1
Category 2	2
Category 3	3

Typical approach to core periods (time multiplier)

Core periods are important in setting expected levels of service performance in school facilities. They represent the critical times during which the school's core activities (i.e. academic activities) take place and the facility must be available for use for its primary purpose. The contract normally defines the core periods as the *school day* (which may comprise either a single session or be split into a morning and afternoon session), *the school week* and *the school year*. The contract will stipulate the expected number of school days in a year (usually circa 190 calendar days) and will often provide specific dates (where known) for the first few years of operation (also representing a typical school year). The specific services that the private partner is expected to provide and the level of the availability deductions calculated for a school's spaces may vary depending on whether an availability failure event has occurred during or outside of the school's core periods.
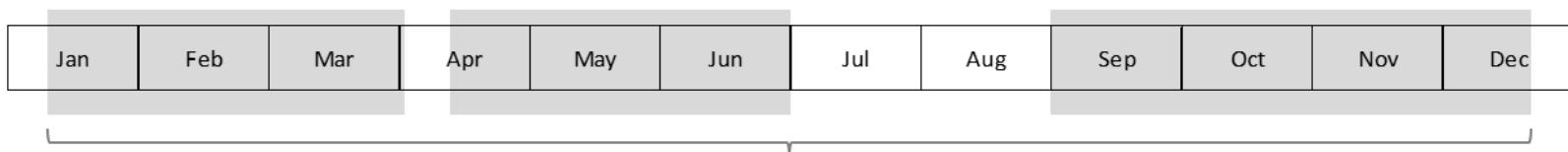
- **A school day:** i.e. core or required periods within a 24-hour cycle

Core period

- **A school week**
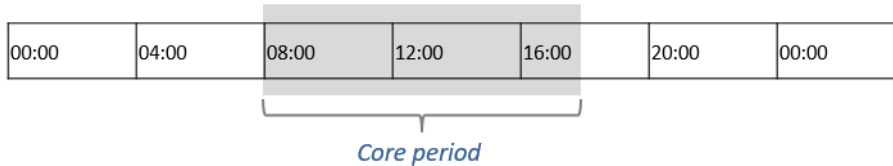
Core periods in a school week
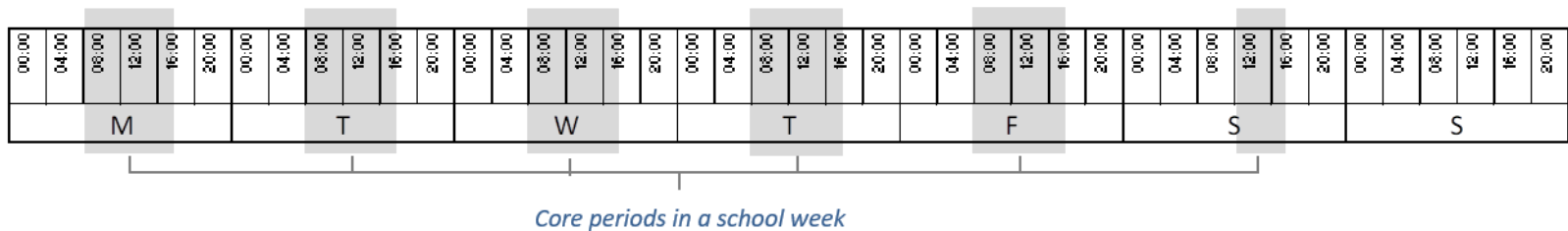
- **A school year**

E.g. 190 school days in a school year

Example of deduction fees for availability failure event categories

Some payment mechanisms use categories to classify the availability failures, usually according to the severity of the failure event. Each *failure category* is attributed an express failure *deduction fee*. The possible availability failure events are defined in a *failures' catalogue* included in the output specifications. Each availability failure event defined in the failures' catalogue is assigned a failure category. The total availability deduction equals the sum of all availability failure deduction fees established by using the failure categories and failures' catalogue system.

Example of using an availability failures' catalogue and availability failure categories from **England**:

Availability failures' catalogue *	
Availability failure description	**Availability failure category**
Failure 1	1
Failure 2	1
Failure 3	3
Failure 4	2
Failure 5	5
Failure 6	1

Availability failure category	Deduction fee
Category 1	[X]
Category 2	[X]
Category 3	[X]
Category 4	[X]
Category 5	[X]
Category 6	[X]
Category 7	[X]

* *Note: the availability failures' catalogue example depicts the concept used, and is not an excerpt from an actual failures' catalogue*

Examples of using failure event multipliers and failure deduction fees

The severity of availability failure events is also taken into account in most school PPPs payment mechanisms, either by using failure event multipliers or by using express failure event deduction fees. The examples below show the use failure event multipliers vs. defining failure deduction fees for each combination of failure event category and space priority. Both methods use failure event categories to indicate the severity of the availability failure events.

Example of failure event multipliers:

Failure category	Failure event multiplier
Category 1	1
Category 2	2
Category 3	3

A: An emergency - immediate risk to health and safety or significant damage

B: Urgent - potential to impact educational services or develop into an 'A' failure if not remedied

C: Medium priority - no immediate risk or only minor disruption

D: Low priority

Example of failure deduction fees:

Failure deduction fees				
		Space priority		
		High	Medium	Low
Failure event level (category)	A	[X]	[X]	[X]
	B	[X]	[X]	[X]
	C	[X]	[X]	[X]
	D	[X]	[X]	[X]

Failure Event Level	Response Time	Rectification Time
Level A	5 minutes	2 hours
Level B	N/A	2 hours
Level C	N/A	24 hours
Level D	N/A	3 Business Days

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Example of repeated failures ratchet

Most schools PPP payment mechanisms use a multiplier (or a "ratchet") to penalise repeated occurrence of failure events. Most payment mechanisms use a single value for the multiplier regardless of the severity of the failure, while others also take into account the severity of the failure event (category) and use a multiple-value ratchet (scale). The multiplier is applied to calculate deductions for repetitions (perhaps above a threshold) that occur within a certain period of time after the original failure event.

Example of using a multiple-value ratchet corresponding to failure categories from **Germany**:

Failure category	Multipliers (ratchet)
Category 1	2
Categories 2 and 3	4

Examples of using a single-value ratchet for all failures from several different countries:

England	Scotland	Wales	Belgium (Flanders)
2	1.5	1.5	1.2

Example calculation of availability deductions using deduction fees for availability failure categories, time multipliers, repeatd failure ratchet and a critical academic factor (England)

The availability failure deduction for an area (space) of the school is the product of deduction fees established according to failure categories and of the time multiplier (the number of school core sessions during which the unavailability occurred). When the ratchet is applicable, the sum of deductions fees is further multiplied by the number of core sessions to which the ratchet applies and the ratchet.

A 'critical academic factor' (CAF) may be used to increase deductions when critical academic functions are affected by the unavailability (e.g. national examinations, and associated mock examinations). The CAF is an express amount per pupil affected with a minimum level of monetary deduction per failure event.

$$AFD_a = AFD \times (TM_1 + (TM_2 \times R)) + CAFI$$

Where:

AFDa = total availability failure deduction for area 'a'

AFD = the sum of all availability failure fees for the area 'a' based on failure categories

TM1 = time multiplier representing the number of school core sessions to which the ratchet does not apply

TM2 = time multiplier representing number of school core sessions to which the ratchet applies

R = the ratchet, if applicable

CAFI = Critical Academic Factor Increment (e.g. if CAF = £10 per affected pupil and if 500 pupils are affected, then CAFI = £10 x 500 = £ 5,000)

Example calculation of availability deductions using failure deduction fees and time multipliers (Australia)

The availability failure deduction in respect of an availability failure event is calculated by multiplying the *failure deduction fee* by the *time multiplier* (the number of reinstatement periods during which the unavailability failure occurred). In this case, the failure deduction fee is determined by selecting the appropriate combination of *failure event category* and *space priority.* The magnitude of the availability failure deduction therefore ultimately depends on the failure's severity, the priority of the space affected by the failure and the length of time needed for correcting the failure.

$$AFD = FDF \times TM$$

Where:

AFD = the availability failure deduction amount in respect of the availability failure event;

FDF = the failure deduction fee (based on the failure event category and the space priority of the space affected by the failure); and

TM = the time multiplier (the number of reinstatement periods elapsed until the failure is rectified)

Example calculation of availability deductions using space weightings, space tariffs and time weightings (Austria)

In this example, availability failure deductions are calculated by using the quarterly *space tariff* allocated to the total area of all spaces corresponding to the same space category as the unavailable space. The availability failure deduction is the product of the quarterly *space tariff*, the *space weighting* (the ratio of the unavailable space net floor area to the total net floor area corresponding to the space's category), the *time weighting* (the ratio of hours of unavailability to the total operational hours per quarter) and the *space priority multiplier*. Compared to previous examples, the magnitude of the deduction does not depend on the severity of the unavailability failure event but is heavily dependent on the amount of space affected and the priority of the space.

$$AFD = ST \times \frac{UA}{TA} \times \frac{UHr}{TOHr} \times SPM$$

Example of availability failure deduction calculation:

$$AFD = €50,000 \times \frac{200 \text{ m}^2}{5,000 \text{ m}^2} \times \frac{100 \text{ h}}{750 \text{ h}} \times 1.25 = €267$$

Where:

AFD = the availability failure deduction in respect of the availability failure event;
ST = quarterly space tariff of the total area of all spaces included in the same space category as the space affected by the availability failure event;
UA = the net floor area of the unavailable space;
TA = the total net floor area of all spaces included in the same space category as the space affected by the availability failure;
UHr = hours of unavailability;
$TOHr$ = total operational hours (per quarter);
SPM = space priority multiplier.

Example calculation of availability deductions using space weightings, failure event multipliers, space priority multipliers, repeated failure ratchet and deduction points (Germany)

In this example, the availability failure deductions are equal to the product of the total number of deduction points and the *deduction point pre-defined tariff*. For each availability failure event, an amount of deduction points is calculated as the product of the *space weighting* (the ratio of area of the unavailable space to the total area of a space in which the availability failure occurred), the *failure event multiplier*, of the *space priority multiplier* and the *ratchet* (when applicable).

$$AFD = DP \times \text{deduction point tariff}$$

$$DP = \frac{UA}{TA} \times SPM \times FCM \times R \times 100$$

Where:

DP = eeduction points

UA = unavailable area

TA = total area

SPM = space priority multiplier

FEM = failure event multiplier

R = ratchet

Example of availability deduction calculation:

$$DP = \frac{20m^2}{2,000m^2} \times 2 \times 3 \times 4 \times 100 = 24 \, points$$

AFD = 24 points × € 15 = € 360

Where: *1 deduction point = € 15;*

Unavailable area = 20 m²

Space priority multiplier = 2

Failure event multiplier = 3

Ratchet = 4

3.3 Relief from deductions arising from unavailability

(i)   Cure (or reinstatement) period

The contract may allow the private partner an opportunity to rectify the unavailability issue with no availability deduction applied if the issue is rectified within a permitted period (a *cure period* or *reinstatement period*). The time allowed for rectification will depend on the severity of the event and its expected impact. Under this arrangement, the contract may define different types (or categories) of failure and assign different cure periods. The duration of the cure period may also be determined by where and when the event occurs (in a similar manner to the multiplying factors). Additionally, a response period may be defined (time the private partner is expected to attend at the scene of the failure event and start to rectify the failure).

Some contracts divide the cure period into two periods: an initial period during which a temporary fix is made, followed by a second period during which the issue is fully rectified. Partial or full abatement of the financial deduction may be made during the first period.

(ii)   Planned maintenance (and permitted or excepted unavailability)

Many (but not all) contracts will not apply availability deductions for planned (i.e. pre-approved) life-cycle or maintenance works. Additionally, a contracting authority may choose to specify in the contract a schedule of pre-planned exemptions for each contract year that give the private partner an allowance of *permitted unavailability* during which no AFD are applied (the period of unavailability must be agreed in advance and unavailability is permitted solely for planned maintenance).

(iii) Exceptions and relief from deductions

Most contracts allow for full or partial relief from availability deductions under specific and exceptional circumstances (relief events or exceptions), e.g. unavailability caused by the contracting authority, unavailability caused by the implementation of work related to variations, emergency not caused by the contractor, utility failure not caused by the contractor.

Taking account of the three types of relief referred to above, an overall general definition of an ***unavailability event*** is any occurrence of unavailability that is (a) not permitted or excepted unavailability and (b) which has not been rectified during the relevant cure period.

Illustration of cure (or reinstatement) periods

Response period priority: *Example:*   <4 hours for **Medium** priority availability/service failure events;

<1 hours for **Urgent**/**Severe** priority availability/service failure events.

Cure or Reinstatement period priority: <12 hours for **Medium** priority availability/service failure events;

<1 hours for **Urgent**/**Severe** priority availability/service failure events.

Cure or reinstatement period
(varies according to priority of failure event)

Response period
(varies according to priority of failure event)

Failure event
occurs
(*time not
recorded*)

Failure event
reported
(*time recorded*)

- If reinstatement measure initiated there is no deduction
- If not initiated, then AFD/SFD applied from time recorded at point '2'.
(*time recorded*)

- If failure event corrected there is no deduction
- If not corrected, then AFD/SFD applied from time recorded at point '2'.
(*time recorded*)

3.4 Limiting the level of deductions

Limiting the level of deductions for failure events

To improve bankability, most PPP payment mechanisms will limit the total deduction that can be made by the contracting authority either within a payment period or in a contract year. The approaches observed in schools PPP contracts taken include:

- Limiting the level of deduction made for all failures to the monthly or quarterly UC;

- Allowing the carry-over to the next payment period of any deduction amount that exceeds the monthly or quarterly UC; but limiting the total deduction in any contract year to the annual UC;

- Allowing the carry-over to the next payment period of any deduction in respect of availability that exceeds the monthly or quarterly UC; but limiting the total deduction in respect of services in any one month to a percentage of the UC and limiting the total deduction amount for all failures in any contract year to the annual UC; and

- No limitation to the deduction level in any period: any amount that exceeds the monthly/quarterly UC is carried-over to the next payment period; any amount that exceeds the annual UC is carried-over to the next contract year.

4. Calculating deductions for service failure events

4.1 Services performed by the private partner

Services commonly included within an availability-based school PPP contract are shown in the table below. These services are intended to enable the performance of the school's core functions (e.g. academic activities). Some services might be considered as already being integral to making the school facilities available (either directly or indirectly), nonetheless performance of these services is monitored and measured separately from availability with reference to defined levels of service. The cost of providing these services is an integral part of the UC. It is not usual to identify separate charges related to these services unless they are reimbursed on a volume-related basis.

As with any reduction in the availability of the school facilities, sub-standard performance of a service during a monitoring period can lead to a *service performance failure event* and a deduction from the UC (a *service failure deduction* or *SFD*). These deductions can be made in addition to any *availability failure deduction,* even if the two deductions are seemingly caused or linked to the same event, although in some contracts where the same a failure leads to both unavailability and service failure events, only the higher of the two deduction amounts will be applied to the UC.

Service type	Description	Examples of services
Facilities maintenance and building systems management	Routine and lifecycle activities related to the maintenance of the facilities built elements and management of building services in order to maintain such facilities elements to the required functional and operational level	Routine and lifecycle maintenance for facilities built elements, such as building systems (e.g. plumbing, heating and ventilation, fire alarm), building fabric and finishes (e.g. floor tiles, wall paint), building assemblies (e.g. roof, windows, doors).
Other facilities management services	Activities related to rendering and maintaining the facilities safe, functional and operational	Helpdesk, cleaning, waste management, security, pest control, catering, grounds maintenance
Utilities management	Activities related to the supply of utilities (e.g. water, electricity, telecommunication) and the management of the consumption of utilities	Procuring and maintaining safe and uninterrupted supply of utilities Quality monitoring and optimisation of utilities consumption

The core functions of a school are its academic activities, and any services directly related to such activities (e.g. teaching, examinations) are the responsibility of the contracting authorities and therefore not included in the PPP contract. School PPP contracts usually include facilities maintenance and utilities management as the basic services provided by the private partner. In addition to these, other facilities management services may be performed by the private partner. The types of services included in schools PPP contracts may vary significantly from jurisdiction to jurisdiction, as illustrated by the table below. Some contracting authorities retain the majority of facilities management services, while other opt for a more integrated approach to facilities management, by including more services in the PPP contract.

England	Germany	Austria	New Zealand
- Facilities maintenance - Utilities management	- Facilities maintenance - Utilities management - Cleaning - Waste management - Security - Catering - Grounds maintenance	- Facilities maintenance - Utilities management - Facilities management - Cleaning - Catering	- Facilities maintenance - Utilities management - Facilities management - Waste management - Security - Pest control - Grounds maintenance

On school PPP projects, the magnitude of the interface risk is strongly dependent on the extent to which services are included or excluded from the PPP contract. By excluding services from the PPP contract, contracting authorities accept to retain a certain amount of interface risk, in order to benefit from more flexibility in service provision in the long-term.

4.2 Defining service performance failure

Performance criteria or service performance standards (including key performance indicators) are defined in the PPP contract. The level of detail of performance criteria varies across different PPP school contracts. Service performance failure is usually defined as the failure to comply with the service performance criteria included in the PPP contract.

Overly detailed criteria may render the actual measurement of services performance very cumbersome and require extensive resources. On the other hand, over-simplification or aggregation of performance criteria may run the risk or not being able to assess and clearly transfer the responsibility for service performance failure to the private partner.

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Examples of service performance failure definitions from different jurisdictions

- **Scotland:** *A performance failure which has been designated as such in the service level specifications*

- **England:** *A failure of the private partner to provide a service in accordance with the performance standards relating to a relevant service requirements*

- **Germany:** *A non-space related failure defined in the service level specifications (catalogue of specified failure events).*

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Examples of service performance standards

Service	Performance standards
Facilities maintenance	- The private partner should maintain the exterior doors to insure that they are secure, with the door security system operational at all times; - All sanitary sewer pipes, drainage traps and interceptors are free flowing and unblocked; - Filtration media is maintained and replaced as necessary to maintain indoor air quality and the efficient operation of the heating and ventilation system
Utilities management	- The private partner is responsible for securing and maintaining connections to electricity provider(s) services of appropriate specification and capacity.
Waste management	- Ensure that waste storage areas shall be segregated, kept clean from loose litter, malodour and debris, free from pest and vermin, stored to minimise the risk of fire.
Catering	- Ensure that all food is handled, stored, prepared and cooked appropriately.
Pest control	- Provide safe and efficient methods of catching, destroying and safely disposing of pests, adopting safe and humane procedures at all times.
Grounds maintenance	- Perform effective but economic irrigation.
Security	- Ensure that all access points to all buildings and grounds premises are secured and locked down at the scheduled times. - Provide a number of periodic deep cleaning duties to a frequency that will maintain the requirements of the applicable service specifications.

4.3 Dealing with non-performance of services

(i)   Monitoring performance and sanctioning non-performance

Even if the school is fully available to users from the service availability date, the delivery of the services may not comply with relevant standards established in the contract. The quality of service delivery is therefore monitored regularly for compliance with contractual performance standards and targets. Certain services must be delivered within a certain specific time (e.g. snow clearance), whilst other activities may not be so time-sensitive (e.g. litter clearance or grass-cutting). In the case of time sensitive activities, most PPP contracts normally allow specific response and cure periods to elapse before deductionsare imposed. Additionally, the monitoring of all these activities itself may be a core service linked to performance standards, for example on reporting. In certain cases, poor or non-performed activities may also lead to unavailability of the school facilities (e.g. a poorly maintained heating and ventilation system may not be able to maintain room temperature within the required maximum and minimum temperature).

Where service performance falls below the required standards or is not performed by the required time, the contracting authority normally has options to apply either:

- availability failure deductions (if the service failure also leads to unavailability as defined in the contract);

- allocate *performance failure points* (PFPs) as part of a deduction regime (with a monetary value assigned to each point); or

- make direct performance failure related deductions according to a schedule of financial charges according the nature of the failure.

The most common approach adopted in the European market is a system based on the allocation of performance failure points, albeit the detail and specifics of each method varies. The accumulation of PFPs will also generally be taken into account when In considering contract default and termination either in combination with availability failure deductions or separately.

(ii) Persistent non-performance and breaches of contract and use of a repetition deduction or 'ratchet'

The UC is based on a full provision of the service with different deductions made depending on service performance, with a different weighting (multiplying factors) used to reflect operational priorities. In most payment mechanisms, the deduction is based on an escalating tariff so that repeated service failure leads to progressively higher deductions. A ratchet mechanism may be used to increase the deduction for a failure event that has not yet been rectified within the required period or that recurs too frequently in a specified period. The ratchet is generally in the form of a multiplier applied for the time that the failure event exists. Ratchets might also apply to failure types that keep happening, even if individual events are at different locations. The multiplier may be non-linear, so that cumulative penalty points ramp up quite rapidly. Care should be taken during calibration to avoid too high a deduction happening in any period without reasonable time allowed to reinstate the service.

Example of a repetition deduction or ratchet (EU)

(a) *If a service failure event is repeated within the same or the following payment period and the event falls within the same category, then the contracting authority may re-impose the same number of penalty points as on the previous occasion, increased by [value].*

(b) *If a service failure event lasts for longer than [time period] then the contracting authority may impose [value] additional quality failure points for each further [period] the service failure event lasts to a maximum of [value] additional quality failure points per payment period for the relevant service failure event.*

(iii) Performance incentive payments

Performance incentive payments have been in use in some European jurisdictions (e.g. Germany). They are intended to reward steady high level performance maintained over a certain period of time (usually exceptional and sustained performance beyond the prescribed minimum thresholds). The notion of incentive payments reflects some contracting authorities' attitude toward the payment mechanism, i.e. it is not only a tool for deducting for non-performance, but also used to encourage high performance in order to minimise disruptions in a school's core activities. In practice, the calculation of these types of incentives is reported to have been found complex and time consuming and some contracting authorities have decided to no longer use it.

(iv) Escalating concerns: increased monitoring, warning notices and termination

The contract will normally include certain thresholds of failure deductions which, if exceeded, will cause a warning notice to be issued to the private partner. A breach of the contract by the private partner can occur once one or more warning notices have been issued, with further breaches once higher thresholds are exceeded. Normally, several warning notices of increasing importance are generally required before successive breaches give rise to contract default. Each notice will usually allow a fixed time for the private partner and/or its financiers (possibly through *step-in rights*) to cure the cause(s) of the failure events*. As with the level of individual deductions, it is important that the payment mechanism is appropriately calibrated to avoid thresholds that are too low (or 'hair trigger') or so high as to be very unlikely to be reached even under the worst performance levels.

*   *The contract will define those failure types that are able to be corrected and so cure the contract breach and or default, as well as those breaches that are not curable.*

(v) **Limiting the level of deductions for service failure events**

To improve bankability, most PPP payment mechanisms will limit to the total deduction that can be made by the contracting authority either within a payment period or in a contract year. The approaches observed in schools PPP contracts in respect of the service deductions (generally being the lesser part of the deduction regime) include:

- Limiting the level of service failure deduction to a proportion of the monthly or quarterly UC (but without limitation on the availability failure amount) or capping the total number of quality performance points in the period;

- Allowing the carry-over to the next payment period of any deduction in respect of availability and services that exceeds the monthly or quarterly UC; but limiting the total deduction in respect of services in any contract year to a proportion of the annual UC; and

- No limitation to the deduction level in any period: any amount that exceeds the monthly/quarterly UC is carried-over to the next payment period; any amount that exceeds the annual UC is carried-over to the next contract year.

(vi) **Grace periods**

Some contracts allow a short grace period (e.g. two months) immediately following the construction completion date, during which no service failure deductions are applied. This recognises that a period of settling in and adjustment may be appropriate as the private partner and contracting authority (and users) familiarise themselves with the new building and service arrangements. This would typically arise where a high level of daily interaction is anticipated (e.g. where the private partner services include catering, cleaning or janitorial services).

Example approach to service failure deductions using a service failure point band (Australia)

Service failure deductions represent a percentage of the monthly UC which is calculated by adding the total number of *service failure points* incurred during an operating month and using a *service failure point band system* which gradually increases failure deduction percentages as the number of deduction points increases. An example of calculating the percentage of the monthly UC deducted to the monthly service failure deductions: for 39 service (quality) failure points accrued in an operating month, the service failure deduction percentage would be equal to 8.6% (applied to the UC).

(10 points x 0.0%) + (15 points x 0.2%)+(14 points x 0.4%) = 0% +3%+5.6% = 8.6 %

Service failure point band	Service failure deduction % per point
1- 10	0.0%
11- 25	0.2%
26 - 40	0.4%
41 - 60	0.6%
61 +	0.8%

Example approaches to service failure deductions (Austria)

Service failure deduction for 'hard' factors (service performance criteria that are objective and for which the PPP contract defines key performance indicators) are calculated using points scales corresponding to failure levels, reaction time and rectification time. A quarterly cap of 10% of the quarterly indexed unitary charge applies to service failure deductions in relation to 'hard' factors.

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(a) Using a deduction points scale for service failures

Service failure deduction points	
Failure	**Deduction points**
Mild	15
Medium	50
Severe	100

(b) Using a deduction points scale and reaction and rectification time

Failure level	Reaction time Deduction points			Failure level	Rectification time Deduction points		
	once	**twice**	**thrice**		**once**	**twice**	**thrice**
Mild	0	5	10	Mild	0	5	10
Medium	0	10	20	Medium	0	20	50
Severe	0	20	40	Severe	0	75	150

Example approaches to service failure deductions (Austria)

Using users' satisfaction reviews

The service performance review based on 'soft' factors is performed annually by several assessors using a pre-defined evaluation form. The assessors represent school employees, users and stakeholders.

'Soft' factors are subjective criteria such as friendliness, courtesy and reliability. Each criterion is graded using a 5-step scale. The individual scores (from 1 to 5) are averaged for each assessed criterion. A defined percentage of deductions is allocated to the last two steps of the scale (4 and 5) and is applied when averaged score reach either of those two steps. The sum of percentages of deductions for all assessed criteria represent the percentage of total service performance deductions applied to the indexed quarterly UC. The total deductions applied for 'soft' factors are capped to 2% of the indexed quarterly UC.

Rating scale for 'soft' factors		
Scale	**Rating**	**Deductions**
1	Fully applies	0
2	Applies	0
3	Party applies	0
4	Does not apply	1% indexed UC
5	Does not apply at all	2% indexed UC

Example calculation of service failure deductions using deduction points scales and users' satisfaction reviews (Austria)

The total deductions for service performance failures equal a percentage of the indexed UC corresponding to the total deduction points. Service failure deduction points are calculated by using a service failure priority scale/failure level categories (based on 'hard' factors) and user satisfaction reviews (based on 'soft factors').

$$SFD = 0.01\% \times (SFDP + ReaTDP + RecTDP) \times IQUC + SFP \times IQUC$$

Where: SFD   = Service failure deductions

                SFDP   = Service failure deduction points

                ReaTDP   = Reaction time deduction points

                RecTDP   = Rectification time deduction points

                IQUC   = Indexed quarterly unitary charge

                SFP   = 'Soft' factors percentage deduction

                1 deduction point = 0.01% indexed quarterly UC

5. Rewards and deductions for energy performance

(i)   Energy services

The private partner's energy-related services in schools PPP contracts usually relate to the supply of utilities (e.g. water, electricity, gas, telecommunication) and the management of utilities consumption (e.g. quality monitoring, reporting and optimisation). Many PPP schools contracts include a set of KPIs that measure the performance of energy services (e.g. maintaining safe connections for utilities, providing utilities consumption reports) and enable the calculation of service failure deductions for poor performance.

(ii)   Energy consumption caps and targets

Recognising that energy costs represent a high expenditure during the operational phase of school facilities, contracting authorities are concerned with the long-term performance of the facilities from the point of view of energy consumption (energy performance). Some contracting authorities therefore specify annual caps for energy consumption (from sources such as electricity, natural gas and other fuels). By specifying consumption caps, the contracting authorities aim to transfer to the private partner the risk of inefficiencies in design, operation and maintenance of the facilities that may cause higher energy consumption and therefore higher utilities costs.

Consumption caps can be determined by developing a computerised virtual building energy model for the future school. The virtual building energy model provides estimates of the likely energy consumption patterns and volumes using assumptions such as expected volumes and types of usage of the school, expected energy performance of the building elements, planned maintenance and operation regime, as well as historic data on energy consumption in similar facilities. The initial building energy model is developed by the contracting authority in the PPP preparation stage and usually corresponds to the indicative design scheme. The information from the virtual building energy model allows the contracting authority to make reasonable assumptions around maximum and minimum energy consumption and set reasonable consumption caps.

The feasibility and optimisation of consumption caps is analysed by bidders in the PPP procurement stage, the dialogue procedure giving them the opportunity to ask questions about the building energy model and assumptions on which the caps are based. The signed PPP contract will include an annual consumption cap based on a predefined pattern of use. In many cases, the annual consumption cap can be adjusted in subsequent years to reflect changes in, for example, consumption patterns, weather patterns or the underlying project itself. In practice, setting energy consumption caps is complex. Energy consumed in the maintenance and operation of the base building systems is relatively easy to estimate under pre-set assumptions (defined school core sessions, number of users, types of usage), but actual consumption is also affected by the behaviours of end-users which can be unpredictable. This has led to the use of consumption risk-sharing mechanisms in many schools PPP contracts.

(iii)   Risk sharing of energy consumption

In some cases, the full risk of energy consumption exceeding the cap sits with the private partner. In these cases, there might be a sharing of cost savings that arise from under-consumption of energy. In other cases, contracting authorities have designed methodologies for sharing consumption risk with the private partner, recognising that while the private partner has a large degree of responsibility for the building's energy performance (through its role in the building's design, maintenance, lifecycle programme and building systems management), the contracting authority is also responsible for potential extra consumption volumes caused by variable usage and unpredictable end-user behaviour (e.g. non-compliance with energy-saving measures). In these cases the payment mechanism will calculate penalties (or rewards) for the private partner for over-consumption (or under-consumption) relative to the annual consumption cap. The penalties (or rewards) reflect the difference between actual energy consumed and the energy consumption cap.

There are numerous mechanisms for sharing the risks (or benefits) of over-consumption (or under-consumption). Some PPP contracts contain a single cap and simple risk (or benefit) sharing ratios for consumption above (or below) that cap. Others adopt a more complex approach with multiple consumption thresholds and different sharing ratios between each threshold.

Example of sharing energy cost savings (Austria)

Energy performance caps are guaranteed by the private partner annually for both electricity and heating (using a pre-agreed consumption pattern). The penalties incurred by the private partner are equal to the cost of consumption above the guaranteed annual caps. Rewards may be awarded to the private partner for lower than guaranteed consumption levels using a 50:50 gain-share principle (50% of savings for the contracting authority, 50% of the savings for the private partner).

Example of sharing both cost savings and losses (England)

The PPP contract includes a cap on total annual energy consumption for the facility. The private partner bears 100% of the risk of consumption above the cap. The private partner may propose annual consumption _targets_ that are below the total annual energy consumption cap. The use consumption _targets_ triggers a shared risk mechanism in the payment mechanism that allows cost savings and cost increases to be shared between the parties in different proportions. For example:

- if energy consumption is below _target(s)_ the contracting authority and the private partner will split the associated cost savings on a 50:50 basis; and

- if energy consumption is above _target(s)_, but below the total annual consumption _cap_, the contracting authority and the private partner will share equally (50:50) the cost of 20% of energy consumed above _target(s)_. The remaining 80% of consumption above _target(s)_ is the private partner's risk.

A further alternative approach involves no consumption cap but routinely measures the energy performance of key elements of the facilities over which the private partner has full control (e.g. boilers, buildings systems), and imposes fixed penalties for sub-optimal energy performance. This approach sees the contracting authority take the risk of consumption linked to variations in use or user behaviour.

(iv)   **Energy performance monitoring**

Once the school is operational, the consumption of energy is monitored (sometimes by the parties jointly through a committee). The data can be collected periodically (e.g. monthly, quarterly). The information is analysed to: i) verify assumptions in relation to consumption caps; ii) compare actual energy consumption against consumption caps iii) decide changes in the payment mechanism parameters including caps based on new assumptions determined by the actual energy performance of the facility or changes in the usage of the facility.

(v)   **Energy prices**

In most schools PPP contracts the contracting authority retains the risk (benefit) of increases (decreases) in energy prices (tariff risk) over the medium to long-term. Transferring this risk to the private partners over the whole term of the PPP contract is unlikely to prove to be value for money or bankable. The PPP contract will typically specify assumed energy tariffs on which expected consumption is based. These assumed tariffs are referred to in calculating rewards/penalties in any consumption risk sharing arrangements (see iii above).

6. Some conclusions

The payment mechanism lies at the heart of the PPP contract, putting the allocation of risk and responsibility between the contracting authority and private partner into effect. Its successful implementation depends on it being:

- sufficiently sophisticated to capture the range of services provided for and measured in the PPP contract;

- proportionate in dealing with poor performance and incentivising good performance;

- flexible to deal with changing needs over the long-term of the PPP contract;

- easily administered and easily audited (delivering and demonstrating expected outcomes).

There is significant commonality of approach across the jurisdictions studied for this report, at least in the overall basis structure of the payment mechanism. Any contracting authorities planning future PPPs in the sector therefore have a strong and clear basis from which to start, with a wealth of experience and expertise on which to draw.

When it comes to detailed definition and calibration issues however, the priorities and concerns of individual contracting authorities, with project (or school) specific needs, come into play. The examples included in this Report show that the payment mechanism can be used to address different concerns and therefore address those specific needs. At the same time, the report shows that there can be different ways to address the same concern and here the recommendation would be to consider carefully approaches that offer greatest long-term flexibility and ease of administration.

European PPP Expertise Centre

epec@eib.org

www.eib.org/epec

Twitter: @EpecNews

Telephone: +352 4379 22022