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Approach of contract managers

A study on penalty points in the exploitation phase of DBFM contracts

TU Delft

Water. Wegen. Werken. Rijkswaterstaat.

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A study on penalty points in the exploitation phase of DBFM contracts

By

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Preface

This report presents the research I did for the graduation thesis to complete the master Construction Management and Engineering at the Faculty of Civil Engineering of the TU Delft. In this master, attention is paid to how the choice is made which contract suits which project. During my internship I became interested in the trajectory that comes next. After a contract form is chosen. It is not prescribed how you subsequently deal with a certain contract form and what the consequences are of a certain approach. I am grateful that I was given the opportunity to conduct this research at Rijkswaterstaat.

First, I would like to thank my graduation committee for their guidance during this research. Leon Hombergen for helping me to get in touch with Rijkswaterstaat and making sure I could do the research I wanted to do. And for giving me the reassurance that I was on the right track. That reassurance motivated me throughout the entire time. Mark de Bruijne for helping me to clear my mind and structure my thoughts when I needed it. And for taking me back to the right track when I wandered too far away. Hans Bakker for chairing the graduation committee and for reading every letter of the documents that I sent. Danny Zwerk for challenging me and putting me out of my comfort zone. I am sorry I used your mailbox as a diary where I could sort out all my thoughts and express all my concerns. Showing me what Rijkswaterstaat is about. Which leads me to thanking the department where the most biscuits and treats from Rijkswaterstaat are eaten. Everyone was always willing to speak to me and listen to my – sometimes very obvious – questions. For all those people, thank you for your openness and patience.

Before I started this graduation, students had told me stories on professors and supervisors that had no clue on what the research was about. Committee members that never read any of the documents that were sent. I had accepted the fact that – even though this graduation was *my* priority – this graduation would not be anyone else's priority. I was pleasantly surprised – to say the least – when I got my report back in printed version with notes on every page. Thank you so much for making me feel like the work I had been doing mattered and that the research I was doing was taken seriously.

Secondly, I would like to thank all of the interviewees that were able to make the time to share their perspectives which gave this research the foundation that it needed. The difficulties they encounter on a daily basis and the field of tension in which they find themselves is difficult to understand. Their enthusiasm and their drive to do a good job made me motivated throughout this entire time.

Last but not least, I would like to thank my family and friends for supporting me throughout this time.

Annemieke van Pelt

Rotterdam, April 2020

Executive summary

Rijkswaterstaat is a governmental institution that is responsible for the management and development of the Dutch main roads, waterways and water systems. A DBFM contract is a contract in which the aspects of designing, financing, constructing and maintaining a construction project are integrated. The contract is long-term and based on delivering a service instead of an asset. This research is aimed at the period of time in the contract after the construction is completed which is called the exploitation phase.

To make sure that the service is delivered according to the standards, the client has formulated functional output specifications. In order to check whether these functional output specifications are met, the performance of the contractor is monitored. This monitoring of the performance is processed into the payment mechanism. If by monitoring it turns out the functional output specifications are not met and thus the performance is insufficient, this has financial consequences for the contractor. After finishing the construction, the contractor receives an availability payment of Rijkswaterstaat every quarter of the year. The gross availability payment is the maximum amount that the contractor can receive. The contractor will receive this amount if no discount is imposed. There are two different discounts that can be imposed by Rijkswaterstaat: the Availability Discount and the Performance Discount. The Availability Discount has a direct link to the payment. There is no debate possible on the Availability Discount. The Performance Discount has an indirect link with the payment. The contractor can approach the Contract Manager of Rijkswaterstaat to discuss the Performance Discount. If the contractor cannot meet certain specifications, penalty points can be imposed by Rijkswaterstaat. The specifications in the contract indicate what amount of penalty points are to be imposed in the occurrence of shortcomings by the contractor. The Contract Manager has the authority to decide on imposing penalty points.

It is known that not every shortcoming according to the contract ends in penalty points. It is unknown how the approach of a Contract Manager can influence the penalty points that are imposed. Different reports state that managers argue that this has to do with the culpability of the shortcoming. How do Contract Managers make this decision? What is their approach? What influences that approach? The political management calls for uniformity and standardisation, while the Contract Managers are afraid that this will come into conflict with the culpability and proportionality of the penalty points and that this will have a negative impact on long-term cooperation (Court of Audit, 2013; Rijkswaterstaat, 2017b; Tweede Kamer der Staten-Generaal, 2017).

The relationship between Rijkswaterstaat as client and the private party as contractor is related in the study to the relationship between principal and agent that forms the basis for both the Agency and the Stewardship theory. These theories are used to generalise and clarify the findings. This principal-agent relationship is characterised by the information-asymmetry between both parties. The exchange of information between the client and the contractor is incorporated into the research.

The main question of the study is as follows:

How do the Agency and Stewardship theories clarify the influence of information exchange between clients and contractors on the approach of Rijkswaterstaat Contract Managers when imposing penalty points in the exploitation phase of the DBFM contract?

The first phase of the research was completed through a literature study and a preliminary research. This preliminary research consisted of studying the internal Rijkswaterstaat document and informal conversations with Contract Managers. This phase ended after the design of a theoretical framework and is followed by the empirical research. This was done through a case study. Four projects were selected for the case study. The Contract Managers of these projects were interviewed. The theoretical framework serves as a tool to analyse and visualise the relative position of the projects. The collected knowledge has been analysed in order to discover interdependencies in the characteristics of the projects in terms of the

perspective on the penalty points regime, sharing information and the approach of the Contract Manager. The last part combines all aspects of the research in which the validation, discussion, conclusion and reflection of the research are presented.

The Contract Manager is part of the Integral Project Management (IPM) team that is responsible for managing one or more infrastructure projects of Rijkswaterstaat. The Contract Manager must ensure that all parties to a contract fully understand their respective obligations and possible shortcomings. The requirements are laid down in the contract by managerial actors. In order to understand these requirements and to assess the outcomes, the Contract Manager obtains knowledge and information concerning the profession. The Contract Manager is located between these managerial actors and the profession. This position relates to the actor that 'can both play the managerial game and understand the profession' and is defined by De Bruijn (2006, pp. 90–91) as a *boundary spanner*.

The process of imposing penalty points starts with the observation that a performance requirement is not met. This can be observed by an individual or by a computer system. In the case of a deviation that is worth penalty points, this is a shortcoming on the part of the contractor. The shortcoming is then registered in a system. Ultimately, a decision will be made on whether to impose penalty points. There are three different outcomes: penalty points are imposed, penalty points are placed on hold and the contractor formulates a control measure or no penalty points are imposed. If the control measure is not met, penalty points can still be imposed. The decision to impose penalty points relates to governance through monitoring and incentives described in the Agency theory. The decision to put a penalty point on hold and to have the contractor formulate a control measure relates to governance by means of empowering structures described in the Stewardship theory. The Contract Manager has the authority to make this decision. The Contract Managers make this decision based on the 'Stramien Boetepunten'. The 'Stramien Boetepunten' is a guideline and not a legislation. This guideline is an attempt to describe the *tacit* approach of the Contract Managers and takes into account the nature of the requirement, the culpability of the shortcoming and the proactivity of the contractor. Culpability and the proactivity of the contractor can often be interpreted in different ways and is subjective. Although imposing penalty points is discussed in the IPM team, one Contract Manager can make different decisions than the other.

The results of the research give a suggestion of a number of interdependencies. The research suggests that a Contract Manager who is closer to the profession obtains more *nice to know*-information, which reduces the demand for *need to know*-information. This Contract Manager has higher levels of trust and prefers to have a control measure formulated. Higher levels of trust and the preference for a control measure relates to the shareholder described in the Stewardship theory. Lower levels of trust, demand for monitoring, focus on the result and choosing to impose penalty points relates to the principal described in the Agency theory. However, the scope and history of the project influence the results of the research mentioned. A Contract Manager on a project with a smaller scope has fewer intermediate links that increase the distance between Contract Manager and the profession. In addition, Contract Managers can include past events in their decision. The problem definition showed that politicians value optimal follow-up of the contract. However, the research shows that the degree of discretion is regularly used by the Contract Managers to deviate from this. This is substantiated by the importance of a *boundary spanner*. By means of the 'Stramien Boetepunten' the Contract Managers attempt to guide their approach as a collective in advance of the decision on imposing penalty points. In order to reduce the risk of losing important information and to get a complete overview of the state of affairs, it is recommended to start collecting the information on imposing penalty points centrally.

Samenvatting

Rijkswaterstaat is een overheidsinstelling die verantwoordelijk is voor het beheer en de ontwikkeling van de Nederlandse hoofdwegen, waterwegen en watersystemen. Een DBFM-contract is een contract waarin de aspecten van het ontwerpen, financieren, bouwen en onderhouden van een bouwproject zijn geïntegreerd. Het contract heeft een lange looptijd en is gebaseerd op het leveren van een dienst in plaats van een asset. Dit onderzoek richt zich op de contractperiode na voltooiing van de bouw, die de exploitatiefase wordt genoemd.

Om ervoor te zorgen dat de dienst wordt geleverd volgens de normen, heeft Rijkswaterstaat functionele outputspecificaties opgesteld. Om te controleren of aan deze functionele outputspecificaties wordt voldaan, wordt de prestatie van de aannemer gemonitord. Het monitoren van de prestaties wordt verwerkt in het betalingsmechanisme. Als door monitoring blijkt dat niet aan de functionele outputspecificaties wordt voldaan en dus de prestatie onvoldoende is, heeft dit financiële gevolgen voor de aannemer. Na afronding van de bouw ontvangt de aannemer ieder kwartaal een beschikbaarheidsvergoeding van Rijkswaterstaat. De bruto beschikbaarheidsbetaling is het maximale bedrag dat de aannemer kan ontvangen. De aannemer ontvangt dit bedrag als er geen korting wordt opgelegd. Rijkswaterstaat kan twee verschillende kortingen opleggen: de beschikbaarheidskorting en de prestatiekorting. De beschikbaarheidskorting heeft een directe link naar de betaling. Er is geen discussie mogelijk over de korting die optreedt bij verminderde beschikbaarheid. De prestatiekorting heeft een indirecte link met de betaling. Indien de aannemer aan bepaalde specificaties niet kan voldoen, kunnen door Rijkswaterstaat boetepunten worden opgelegd. De aannemer kan de contractmanager van Rijkswaterstaat benaderen om de prestatiekorting te bespreken. De specificaties in het contract geven aan hoeveel boetepunten moeten worden opgelegd bij het optreden van tekortkomingen door de aannemer. De contractmanager heeft de bevoegdheid om te beslissen over het opleggen van boetepunten.

Het is bekend dat niet elke tekortkoming volgens het contract in boetepunten eindigt. Het is niet bekend hoe de aanpak van een contractmanager de opgelegde boetepunten kan beïnvloeden. Hoe nemen contractmanagers deze beslissing? Wat is hun aanpak? Wat beïnvloedt die aanpak? Het politieke management vraagt om uniformiteit en standaardisatie, terwijl de contractmanagers vrezen dat dit in strijd is met de verwijtbaarheid en proportionaliteit van de boetepunten en dat dit een nadelige impact zal hebben op de langdurige samenwerking (Court of Audit, 2013; Rijkswaterstaat, 2017b; Tweede Kamer der Staten-Generaal, 2017).

De relatie tussen Rijkswaterstaat als opdrachtgever en de private partij als opdrachtnemer wordt in het onderzoek geanalyseerd vanuit het perspectief van de Agency en de Stewardship theorieën, die gebaseerd zijn op de relatie tussen principaal en agent. Deze theorieën worden gebruikt om de bevindingen te generaliseren en verduidelijken. Deze principaal-agent relatie kenmerkt zich door de informatieasymmetrie tussen beide partijen. Om deze reden wordt ook de informatie-uitwisseling tussen de opdrachtgever en opdrachtnemer onderzocht.

De hoofdvraag van het onderzoek luidt als volgt:

Op welke manier verduidelijken de Agency en Stewardship theorieën de invloed van informatie-uitwisseling tussen opdrachtgevers en opdrachtnemers op de aanpak van Rijkswaterstaat Contractmanagers bij het opleggen van boetepunten in de exploitatiefase van het DBFM-contract?

De eerste fase van het onderzoek is volbracht door middel van een literatuur onderzoek en een vooronderzoek. Dit vooronderzoek is tot stand gekomen het bestuderen van interne Rijkswaterstaat documenten en informele gesprekken met contractmanagers. Deze fase is voltooid na het opstellen van een theoretisch kader en wordt gevolgd door de fase van het empirische onderzoek. De aanpak van de contractmanagers is onderzocht door middel van een casestudie. Voor de casestudie is een viertal projecten

gekozen. De contractmanagers van deze projecten zijn geïnterviewd. Het theoretische kader dient als hulpmiddel om de projecten te analyseren en aan elkaar te relateren. Het laatste deel combineert alle aspecten van het onderzoek in het *synthesize* deel waarin de validatie, discussie, conclusie en reflectie van het onderzoek worden gepresenteerd.

De contractmanager maakt deel uit van het Integraal Project Management (IPM) team dat verantwoordelijk is voor het beheer van één of meer infrastructuurprojecten van Rijkswaterstaat. De contractmanager moet ervoor zorgen dat alle contractpartijen hun verplichtingen en mogelijke tekortkomingen volledig begrijpen. De eisen worden door managerial actoren in het contract vastgelegd. Om deze eisen te begrijpen en de uitkomsten te beoordelen, verwerft de contractmanager kennis en informatie omtrent de professie. De contractmanager bevindt zich tussen deze managerial actoren en de professie. Deze positie relateert aan de actor die 'zowel het managerial spel kan spelen als de professie kan doorgronden' en wordt door De Bruijn (2006, pp. 90–91) gedefinieerd als een *boundary spanner*.

Het proces van het opleggen van boetepunten start bij de waarneming dat er niet wordt voldaan aan een prestatie-eis. Dit kan door een persoon of door een computersysteem worden waargenomen. Bij een boetepuntwaardige afwijking is dit een tekortkoming van de opdrachtnemer. Vervolgens wordt de tekortkoming geregistreerd in een systeem. Uiteindelijk komt er een besluit over eventuele boetepunten. Er zijn drie verschillende uitkomsten: er worden boetepunten opgelegd, boetepunten worden *on hold* gezet en de opdrachtnemer formuleert een beheersmaatregel of er worden geen boetepunten opgelegd. Indien niet aan de beheersmaatregel wordt voldaan, kunnen alsnog boetepunten worden opgelegd. Het besluit om boetepunten op te leggen heeft betrekking op governance door middel van monitoring en prikkels zoals beschreven in de Agency theorie. De beslissing om boetepunten in de wacht te zetten en de aannemer een beheersmaatregel te laten formuleren, heeft betrekking op governance door middel van empowermentstructuren zoals beschreven in de Stewardship theorie. De contractmanager heeft de bevoegdheid om deze beslissing te nemen. De contractmanagers nemen deze beslissing op basis van het 'Stramien Boetepunten'. Het 'Stramien Boetepunten' is een richtlijn en geen wetgeving. Deze richtlijn is een poging om de *tacit* aanpak van de Contractmanagers te beschrijven en houdt rekening met de aard van de eis, de verwijtbaarheid van de tekortkoming en de proactiviteit van de aannemer. Verantwoordelijkheid en proactiviteit van de aannemer kunnen vaak op verschillende manieren worden geïnterpreteerd en zijn subjectief. Hoewel het opleggen van boetepunten in het IPM-team wordt besproken, kan de ene contractmanager andere beslissingen nemen dan de andere.

De resultaten van het onderzoek geven een vermoeden van onderlinge afhankelijkheid. Het onderzoek suggereert dat een contractmanager die zich dichterbij professie begeeft frequent en vroegtijdig informatie uitwisselt met de opdrachtnemer. Op deze manier kan er meer *nice to know*-informatie verkregen worden wat de belangstelling in *need to know*-informatie kleiner maakt. Deze contractmanager heeft meer vertrouwen en kiest eerder voor het laten formuleren van een beheersmaatregel. Hogere mate van vertrouwen en de keuze voor een beheersmaatregel relateert aan de *shareholder* beschreven in de Stewardship theorie. Mindere mate van vertrouwen, vraag naar monitoring, focus op het resultaat en het kiezen voor het opleggen van boetepunten relateert aan de *principaal* beschreven in de Agency theorie. Echter, de scope en de geschiedenis van het project hebben invloed op de genoemde resultaten van het onderzoek. Een contractmanager betrokken bij een project met een kleinere scope heeft minder tussenliggende schakels die de lijn tussen contractmanager en professie vergroten. Bovendien kunnen contractmanagers gebeurtenissen uit het verleden meenemen in hun beslissing. Uit de probleemstelling bleek dat de politiek waarde hecht aan een optimale opvolging van het contract. Echter, uit het onderzoek blijkt dat de discretionaire bevoegdheid geregeld door de contractmanagers gebruikt wordt om hier van af te wijken. Dit wordt onderbouwd door middel van het belang van een *boundary spanner*. Om te voldoen aan de wensen van het politieke management zijn de hoofdlijnen van het beslissingsproces van het opleggen van boetepunten vastgelegd in het 'Stramien Boetepunten'. Op deze manier wordt de aanpak van contractmanagers als collectief voorafgaand aan de beslissing van het opleggen van boetepunten enigszins gestuurd. De informatie omtrent boetepunten wordt niet centraal verzameld binnen Rijkswaterstaat. Om het risico op het verlies van belangrijke informatie te verkleinen en een compleet overzicht van de stand van zaken te krijgen wordt er aanbevolen om de informatie omtrent de boetepunten centraal te verzamelen.

Content

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List of abbreviations

BOT	Benen Op Tafel (in English: legs on the table)
CM	Contract Manager
CON	contractor
CUP	Central Unit on Purchasing
D&C	Design & Construct
DBFM	Design, Build, Finance & Maintain
DBFMO	Design, Build, Finance, Maintain & Operate
DBM	Design, Build & Maintain
GPO	Grote Projecten en Onderhoud (in English: Big Projects and Maintenance)
GWW	grond-, water-, en wegenbouw (in English: earthwork, hydraulic engineering and road construction)
IPM	Integral Project Management
MTC	Maintenance Company
PFI	United Kingdom
PiP	Primus inter Pares (in English: First among Equals)
PMS	Performance Measurement System
PPO	Programma's, Projecten en Onderhoud (in English: Programs, Projects and Maintenance)
RWS	Rijkswaterstaat
SAA	Schiphol-Amsterdam-Almere
SCB	System-oriented Contract Management
SPC	Special Purpose Company
SPV	Special Purpose Vehicle
TOBO	Technisch Overleg Beheer en Onderhoud (in English: Technical Consultation Management and Maintenance)
UK	United Kingdom
VfM	Value for Money

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Part I Introduction

1

Problem introduction

The construction sector is the third biggest sector in the Netherlands (Central Statistical Office, 2019). This sector holds 4% of the total gross domestic product of the Netherlands and is, therefore, a very important sector (Rijkswaterstaat, 2019, p. 7). The construction sector contains different activities that are generally referred to as construction and infrastructure (in Dutch: bouw & infra). In which 'construction' is defined by general civil and utility construction and 'infrastructure' is referred to as earthwork, hydraulic engineering and road construction (in Dutch: grond-, water-, en wegenbouw (GWW)) (UWV Afdeling arbeidsmarktinformatie en - advies, 2013, p. 6). This specific research is done on various projects in the infrastructure sector. The trendline of Figure 1.1 shows the ongoing increase in development of turnover in the infrastructure sector in the Netherlands between 2005 and 2018. It is estimated that this sector will grow 3,4% annually between 2018 and 2023.

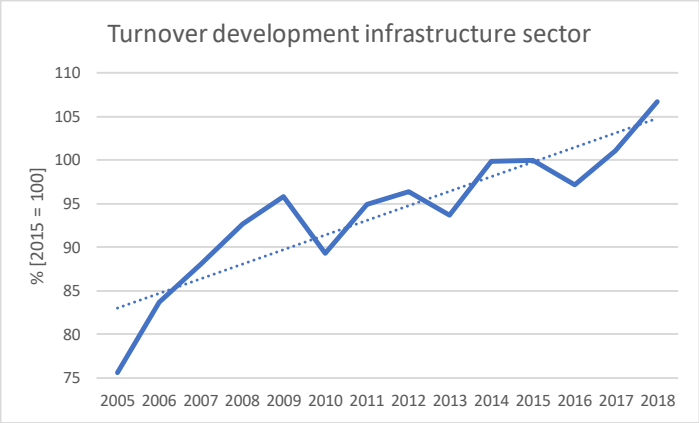

Figure 1.1 Turnover development infrastructure sector of the Netherlands (Central Statistical Office, 2019)

The public authorities are responsible for almost all the contracted projects. Public authorities could be provinces, municipalities or Rijkswaterstaat. Rijkswaterstaat is a governmental institution that is responsible for the management and development of the Dutch main roads, waterways and water systems. The private parties, then, carry out the tasks. The customer, on the other hand, are not the public authorities themselves, but the infrastructure users among the population.

The traditional way of contracting in the infrastructure sector has changed considerably in recent decades. Previously, each phase of the infrastructure development was granted to a new party. Generally speaking, the phases are the tender phase, the realisation phase and the exploitation phase. Rijkswaterstaat invites private parties to make a proposal and the tender phase is finished when eventually one is chosen. In order to complete a construction project, the following aspects of the infrastructure development process must

be completed in the realisation phase: the project design, the projects financing and the construction of the project. After completion of the construction project, the following aspects must be managed in the exploitation phase: the maintenance and the operation of the asset. The public sector remains the owner of the asset that is the result of the infrastructure development described above.

The construction sector is increasingly dealing with integrated contracts, in which the aspects of the infrastructure development in the realisation and exploitation phase described above are processed in one contract.

The Dutch government distinguishes three different forms of integrated contracts (Rijksoverheid, n.d.):

- Design & Construct (D&C);
- Design, Build & Maintain (DBM); and
- Design, Build, Finance & Maintain (& Operate) (DBFM(O)).

The research that is proposed will only study DBFM contracts. The public authorities in the infrastructure branch keep the responsibility for the operating part of the infrastructure. Therefore, the (O) of DBFM(O) will not be part of this research. The contractor in DBFM contracts is responsible for the design, the construction, the finance as well as the maintenance of the constructed project.

It is assumed that the contracted party will be able to optimally align design, construction and maintenance costs this way (Koster et al., 2008, p. 6). This automatically results in a long-term contract that can last up to 20 to 35 years. It is expected that the integration of the construction and maintenance phases with the design of the project will result in better quality for the principal and lower maintenance costs. The contractor can design a project keeping the construction as well as the maintenance of that same project in mind.

In the past two decades the number of DBFM projects has increased. Rijkswaterstaat reported DBFM projects are worth 38% of the total contract sum 2010-2018 (Rijkswaterstaat, 2019, p. 12). This increase in projects, the financial interest and the notified risks were the reason for the study on the execution of DBFM projects by the Dutch Court of Audit (Court of Audit, 2013, p. 3). In the report the Court of Audit is critical of the contract management and the implementation of the steering mechanism. One of their main findings is that the penalties and discounts for insufficient performance, which have been agreed upon in the contract, are not always applied in practice. The Minister of Infrastructure and Environment responded by emphasizing that professional contract management is hard on culpable shortcoming and focuses on a long-term business cooperation, when it comes to non-culpable shortcomings. Imposing penalties should not be the goal of contract management in DBFM projects, but a means (Rijkswaterstaat, 2019, p. 22). The possibility to choose triggered the study in what situations penalties for shortcomings will be imposed or not. A better overview of the course of events while imposing penalties or not would be beneficial.

As previously mentioned, Rijkswaterstaat distinguishes three different phases in DBFM contracts: the tender phase, the realisation phase and the exploitation phase. At this point, most of the infrastructure projects are in the exploitation phase. However, as this kind of contracting in the Netherlands is fairly new, the majority of the research has been conducted on the tender and the realisation phase, while there is limited evidence about the exploitation phase of DBFM projects (Hueskes, Koppenjan, & Verweij, 2016; Verweij, 2015a, 2015b, 2016).

The main research question for this thesis states: '*In what way do the theories on agency-stewardship clarify the influence of information sharing between clients and contractors on the approach of Rijkswaterstaat Contract Managers regarding imposing penalty points in the exploitation phase of DBFM contract?*' After this problem introduction chapter, the design of the research is clarified in chapter 2. Among others, the theories will be explained in chapter 3. The data that are gathered for the research are presented in chapter 4. After which the case study is presented in chapter 5 and analysed in chapter 6. The entire thesis will come to an end in the synthesize part in chapter 7 to 10.

2

Research design

This chapter contains the design of the research that was conducted. The first paragraph (2.1) will shine light on the different aspects of the problem statement. The goal of the research is specified in paragraph 2.2 by means of the research objective. In this paragraph attention is paid to the payment mechanism and the role of the contract manager in DBFM projects. Furthermore, the research framework is introduced in paragraph 2.3. The results will be achieved by answering the research questions that are stated in paragraph 2.4. Finally, the methodology in paragraph 2.5 explains and justifies how these answers are found and what steps need to be taken.

2.1 Problem formulation

The previous chapter already introduced the development of DBFM contracts and the issues that were described in the report of the Dutch Court of Audit. In this paragraph this type of integrated contract and the significant perceived problems are examined further. However, an extensive description on those will be given in the upcoming chapters.

2.1.1 DBFM contracts

The Ministry of Finance is responsible for the general DBFM policy, the implementation of the policy and the supervision in the Netherlands (Ministry of Finance, 2017, p. 10). The ministry has been promoting DBFM since 1990s and has officially introduced the contract to the public in 1999. In a pilot program was examined whether the first projects appeared to be beneficial. By that time the United Kingdom had been implementing integrated contracts for almost a decade (Reynaers, 2014, p. 24).

The general idea of a DBFM contract is that the public party that is contracted provides a service instead of a product. For example, the contractor delivers and maintains a fully functioning highway instead of just 2x2 lanes (Rijkswaterstaat, n.d.). DBFM contracts are intended to stimulate innovation and efficiency in construction projects. Integrating the maintenance of the delivered project in the contract aims to improve the quality of the deliverables. Furthermore, it is assumed the private party is better able to bear the risks of the development and, therefore, in a DBFM contract the risks are with the private party (Koster et al., 2008). An extensive clarification of the motives for DBFM and the principles of DBFM can be found in paragraph 3.1.

In chapter 1, it was briefly stated that the contracted private party is responsible for the design, the construction, the financing and the maintenance of the infrastructure. The investment costs, that are provided by the client in traditional contracts, are the responsibility of the contractor in DBFM contracts. DBFM contracts are considered for infrastructure projects from a contract value of 60 million euros. These infrastructure projects are, therefore, relatively large and complex. Due to the characteristics of these projects, they are often only suitable for very large companies or several companies in collaboration. Different companies temporarily form an organisation, that is called a consortium, to share risks and knowledge (Verweij, Loomans, & Leendertse, 2019, p. 6). The consortia are generally formed by different contractors and engineering companies. However, companies with expertise in the field of project

management or consultancy firms, for example, could be a part of a consortium as well. The private party – generally – founds a 'Special Purpose Vehicle' (SPV) or 'Special Purpose Company' (SPC). The DBFM contract binds Rijkswaterstaat to the SPC. The SPC has a contract with the Maintenance Company (MTC). Both the SPC and the MTC are referred to as the contractor or the private party. The SPC is founded solely to realise a specific project and the MTC is founded solely to perform maintenance on a specific project. To finance the project the SPC typically loans 90% from private financiers and 10% equity of the shareholders (Spackman, 2002, p. 286). The client – mostly Rijkswaterstaat – will pay for the availability of the infrastructure instead of the asset itself.

2.1.2 Perceived issues on penalty points

In chapter 1 it was briefly stated that the penalties and discounts for insufficient performance, which have been agreed upon in the contract, are not always applied in practice. The Contract Managers of Rijkswaterstaat in DBFM projects have the authority to decide whether a shortcoming according to the contract should result in a penalty and to withdraw imposed penalty points after debate. The contractor can approach the Contract Manager of Rijkswaterstaat to discuss the potential penalty points if they do not agree with the reduction in payment. After dialogue, the Contract Manager of Rijkswaterstaat will decide whether the contractor is culpable for the inability of achievement in goals and, thus, whether the penalty points will actually be imposed (Court of Audit, 2013; Koster et al., 2008; Rijkswaterstaat, 2017b). The possibility to withdraw penalty points was characterized as a bottleneck by the Court of Audit (2013, p. 12). The report of the Court of Audit states that the ability to decide on imposing penalty points is contrary to the principle of DBFM contracts. The Court of Audit refers to one of the building blocks of DBFM: steering on output. The government pays for the agreed performance which means that if the performance is not (fully) delivered, the government will not (fully) pay the fee. As a result of this steering mechanism the interests of both parties are aligned. According to the Court of Audit (2013, p. 12), the relationship between costs and quality of projects will come under pressure if this mechanism is not applied correctly.

Every two years the Ministry of Finance publishes a progress report on DBFM(O) projects. The progress report 2016/2017 (2017b) states a standardised assessment framework 'Stramien Boetepunten' was formulated after the audit to help the Rijkswaterstaat Contract Managers to decide on imposing penalty points. Besides, the report formulates the goal to keep standardising the procedures and tools (Rijkswaterstaat, 2017b, p. 22). In response to this report, the standing Committee for Finance formulated a set of questions which are stated and answered in a report of a written consultation on Public Private Partnership in the Netherlands: 'Kamerstuk 28753'. Question 27 addresses the uncertainty on how often identified penalty points are not imposed. The report agrees with the claim that imposing penalty points and discounts is not an end in itself. The opinion in the report is that optimal fulfilment of the contract is the goal (Tweede Kamer der Staten-Generaal, 2017, p. 4). Additionally, an explanation for not imposing the penalty points is requested. This is explained by showing the viewpoint and context of the Contract Managers of Rijkswaterstaat. It is stated that in some of the cases imposing one or more penalty points would be 'contrary to the principle of reasonableness and fairness'. Another reason not to impose penalty points according to the report is caused by the assumption that the resulting discount can be disproportionate (Tweede Kamer der Staten-Generaal, 2017, p. 15).

All three of the reports (Court of Audit, 2013; Rijkswaterstaat, 2017b; Tweede Kamer der Staten-Generaal, 2017) emphasize the difficulties and ambiguity concerning imposing penalty points in DBFM contracts relating to the culpability and the proportionality of the shortcomings. Imposing or withdrawing penalty points is decided upon within the responsible project team of Rijkswaterstaat under the direction of the Contract Manager. Based on informal conversations with Contract Managers of Rijkswaterstaat it is concluded that there are differences in the 'behaviour of imposing' among the Contract Managers but it is unknown how this could be explained. At the moment different Rijkswaterstaat Contract Managers may make different decisions on penalty points in DBFM contracts. Some might make choices that are more favourable for contractors, which they could bring up in discussions on other projects. Subsequently, the

discussion will be about why others were spared and they are not. And, no longer about the culpability of the penalty points. These differences in the 'behaviour of imposing' directly affect their position in the project when a contractor is involved or in contact with other projects with DBFM contracts. Rijkswaterstaat Contract Managers have described these circumstances during informal conversations.

Moreover, Dutch clients and sector organisations in the construction sector established a report called 'Market Vision' (in Dutch: Marktvisie) in 2015 aiming to work together on 'a vital and sustainable sector' (Rijkswaterstaat et al., 2015). Together, the organisations have formulated the following ambition for 2020: "We excel, as 'builders of the Netherlands', by being reliable, approachable and inspiring and we work together for citizens and companies on a safe, liveable and accessible Netherlands." Being a reliable partner as a client in cooperation with the market is – among other things – related to being predictable for the market (Kuitert, n.d.; Kuitert, Volker, & Hermans, 2019). Predictability contradicts with the possibility of Rijkswaterstaat Contract Managers making different decisions on penalty points in DBFM contracts. Without the predictability of the client, private parties cannot sufficiently prepare for future tasks (Kuitert et al., 2019, p. 270).

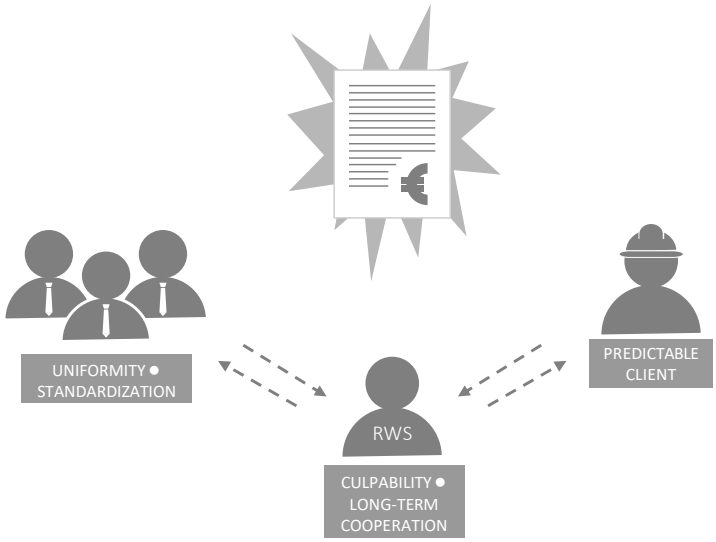

Figure 2.1 Interest of different parties

To summarize, there seem to be two extremes of perceived issues on penalty points: on the one hand the demand of management for uniformity and clarity and on the other the issues of the Contract Managers regarding the culpability of the penalty points and the impact on long-term cooperation. The interaction between management and the Contract Manager in terms of penalty points is illustrated in Figure 2.1. The figure shows that the Contract Manager is interacting with a second party, the contractor. Based on the informal conversations with Contract Managers, it is assumed the differences in behaviour and approach of the Contract Managers puts the client and/or the contractor in an ambiguous situation in which the market party cannot predict the decisions of the public party. Therefore, it is assumed that predictability of the public party would be beneficial for both parties.

2.2 Research objective

The specific contract form and the issues perceived by different institutions have been clarified in the previous paragraph. Before stating the research objective, the role of the Contract Managers including the responsibilities, authority and their position in the organisation is defined. Following, the payment of the

contractor is explained. Both aspects are stated in their formal meaning. A more unofficial description based on the conversations with the Contract Managers is given in chapter 4. Finally, the goal of the research in terms of a research objective is briefly described.

2.2.1 Role of a Rijkswaterstaat Contract Manager

To understand the difficult task that comes with the job of a Rijkswaterstaat Contract Manager, it is important to know how the organisation of Rijkswaterstaat is structured. The organisation is illustrated in Figure 2.2. The figure shows that the organisation is divided into two divisions: the national and the regional division. Both divisions have seven different departments. The Contract Managers of Rijkswaterstaat that are involved in this research are part of the department Programma's, Projecten en Onderhoud (PPO), which can be translated to Programs, Projects and Maintenance. PPO works on the maintenance of national roads, waterways, bridges, flood defences, locks, and the control installations throughout the Netherlands (Rijkswaterstaat, n.d.-c).

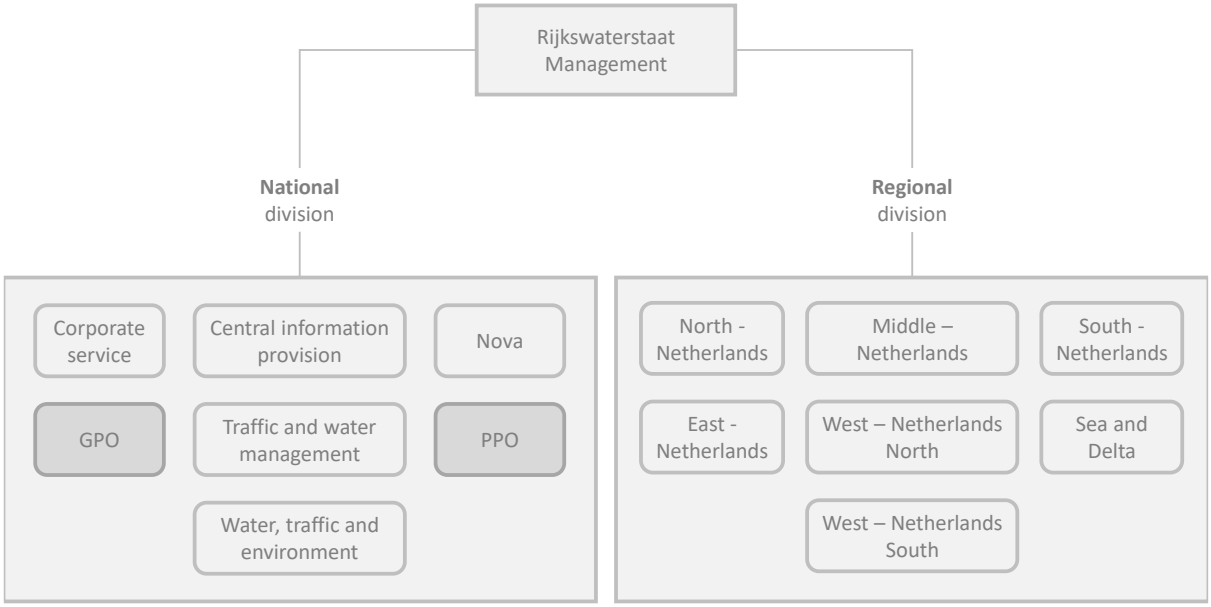

Figure 2.2 Organisation chart Rijkswaterstaat

However, DBFM projects are only transferred to PPO after the construction is finished. The tender and the realisation phase are handled by the department Grote Projecten en Onderhoud (GPO), which can be translated to Big Projects and Maintenance. GPO realises construction and maintenance projects and ensures that our road and water networks are and remain available. GPO realises the production, improves the work process and is responsible for the required knowledge development (Rijkswaterstaat, n.d.-b).

All infrastructure projects of Rijkswaterstaat – including DBFM projects – are managed by means of Integral Project Management (IPM) teams. IPM-teams generally consist of a Project Manager, a Technical Manager, a Contract Manager, a Stakeholder Manager and a Project Control Manager. In some cases an IPM-team is reinforced with more Managers or Advisors. There is not one way to compose an IPM-team. This can be adjusted to the needs and requirements of a project.

The IPM-teams represent the client Rijkswaterstaat in the collaboration on the projects and mainly interact with the contractor and the district. The interaction is illustrated in Figure 2.3. The contractor is responsible for delivering the service that the client has requested. The district is the asset owner and will operate the road or waterway when available for the infrastructure user.

Figure 2.3 Interaction between GPO/PPO, the contractor and the district

The Contract Manager, who is central to this research, is a member of the IPM-team. The Central Unit on Purchasing (CUP) has defined Contract Management as the process which ensures that all parties to a contract fully understand their respective obligations enabling these to be fulfilled as efficiently and effectively as possible to provide even better value for money' (Central Unit on Purchasing, 1997). In other words, their job is to make sure everyone on the project operates according to the contract. The World Bank (2018) has distinguished a set of responsibilities of Contract Managers. This set of responsibilities is illustrated in Figure 12.1. Many of these responsibilities are in some way related to what this research concentrates on. For example, 'monitoring and measuring outputs' and 'control payments for successful delivery' (The World Bank, 2018, p. 6).

This research concentrates on an aspect of the payment mechanism of DBFM contracts: the penalty points. The contract specifies the penalty points that are imposed if there is a certain shortcoming. The Contract Manager must ensure that all parties to a contract fully understand their respective obligations and possible shortcomings. According to most DBFM agreements, the contractor is obliged to report shortcomings that are observed along with the corresponding penalty points. This will be explained in detail in chapter 4.

2.2.2 Payment mechanism defined

As earlier mentioned, the client, in DBFM contracts, requests a service from the contractor instead of a product. This service must meet the requirements of the client. These criteria relate as much as possible to the result desired by the client and not to the way in which the contractor must achieve that result. This is an "output driven" process; the criteria formulated by the client are therefore called "output specifications" (Koster et al., 2008, p. 8). The output specifications are based on the practical service that is required by the client. Therefore, the output specifications are often referred to as functional output specifications. The output specifications are automatically or manually recorded in a system or program. For example, a Performance Measurement System (PMS) or a maintenance management system. In this way, the contractor's performance is monitored. The contractor manages these programs and systems himself, which is then referred to as self-monitoring. In case that the contractor is underperforming, a financial sanction is applied to the agreed payment. This payment is illustrated in Figure 2.4.

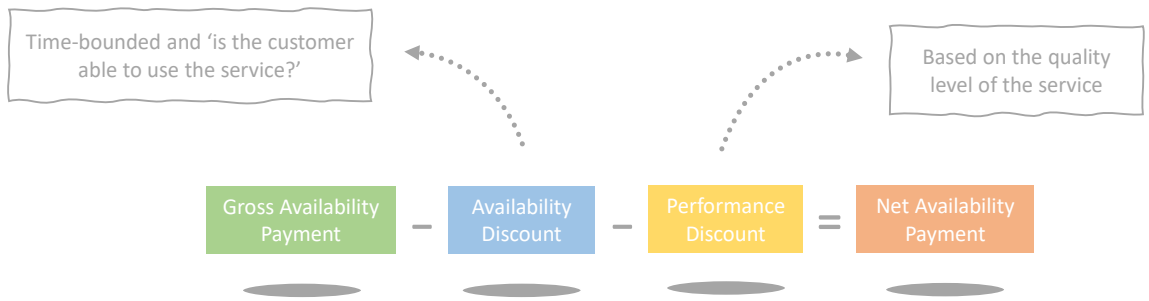

Figure 2.4 Payment mechanism DBFM

There are two different output specifications: Availability Discount and Performance Discount. The former is determined by the availability of the service that the contractor provides to Rijkswaterstaat. The value of the Availability Discount is not debatable after the observation. Contrary to the former, the latter is indeed arguable (Rijkswaterstaat, 2017a, p. 10). The Performance Discount is determined by the requirements that are agreed upon in contract which are based on the quality level of the service. Either the client or the contractor can observe an occurrence in which a requirement is not maintained. The observation can be by the physical observation. For example, a road inspector of Rijkswaterstaat or an employee of the contractor identifies an unsafe situation. Apart from a physical observation, the observation can be automatically registered in a program or system. If a requirement is not met, this is a deviation from the contract. A deviation from the contract can be a shortcoming. The contract specifies how many penalty points may be applied for a given shortcoming. The program or system generates the intended Performance Discount by means of penalty points and these are generally automatically integrated into the Periodic Statement (in Dutch: Periodieke Opgave). The Periodic Statement is a report on the events of a period of three months which includes the quarterly payment. The contractor can approach the Contract Manager from Rijkswaterstaat to discuss the imposed penalty points if he does not agree with the reduction in payment. After dialogue, the Contract Manager of Rijkswaterstaat will decide on whether the contractor is culpable for the inability of achievement in goals and, thus, whether the penalty point will actually be imposed (Court of Audit, 2013; Koster et al., 2008; Rijkswaterstaat, 2017b). Lastly, the contract allows the contractor the possibility to build up a kind of buffer. After a number of penalty point free quarters the contractor can earn bonus points. These bonus points expire when penalty points are imposed, but prevent the financial sanction. For instance, Rijkswaterstaat imposes four penalty points. However, the contractor has earned two bonus points in the past by having penalty point free quarters. All of the penalty points are imposed and registered in the Periodic Statement. Nevertheless, the discount on the quarterly payment will be worth only two penalty points. In practice, bonus points are rarely earned in the majority of the projects.

2.2.3 Theoretical perspective

The application of functional output specifications, monitoring and payment mechanism is explained in the previous section. A theoretical perspective needs to be constructed in order to develop a scientific research. The theories of Agency and Stewardship were chosen to explain the relationship and cooperation between client and contractor. Both of these theories are based on a model that describes that one party hires another to perform a service. The parties that are described in this model are referred to as the principal and the agent in the Agency theory. The principal relates to the role of the client and the agent to the role of the contractor. The Stewardship theory refers to 'the agent' as 'the steward' and to 'the principal' as 'the shareholder'. The agent that performs the work for the principal is in possession of valuable information. As the contractor is self-monitoring, this is the case for the contractor as well. The agent is able to withhold the information for the principal, as a consequence it is unknown to the principal what he or she does not know. This is called 'information asymmetry'. The formal way information is shared between client and the

contractor is agreed upon in contract. In addition to the formally obtained information, the client can also receive informally obtained information. The client makes a decision based on the total information gathered and in this case the Contract Manager makes a decision regarding the penalty points. The theories that explain the way in which the valuation of the contractor's performance is organised and the tension this entails is further explained in chapter 3. The theories of Agency and Stewardship describe the differences in the characteristics of the individuals that are involved in the cooperation. The characteristics of the individuals can explain the approach of the principal and the agent. This is assumed to support the clarification of the approach of Contract Managers of Rijkswaterstaat.

2.2.4 Research objective

The previous paragraphs and sections stated that it is unclear for Rijkswaterstaat management that is not involved in the projects when penalty points are imposed and why Contract Managers decide not to impose them. Besides, it is assumed Rijkswaterstaat Contract Managers operate using different 'behaviour on imposing'. The Rijkswaterstaat management calls for uniformity and standardisation, while the Contract Managers are afraid that this will come into conflict with the culpability and proportionality of the penalty points and the impact on long-term cooperation. There is an interest from both parties for more clarity and more specific substantiation for the decisions made. It is currently unclear to distanced management how decisions are made and what the reasons are for imposing or withdrawing penalty points. Besides that, it is unknown what the process from reporting a shortcoming to imposing a penalty points specifically entails and whether this is the same for every project. Furthermore, the flexibility that the Contract Managers have when deciding on penalty points is undefined. The research is focused on the information aspect that is central to the relationship between client and contractor described by means of the Agency and Stewardship theories. In addition to this, researchers have emphasized the demand for more research on the exploitation phase of DBFM contracts (Hueskes et al., 2016; Verweij, 2015a, 2015b, 2016). A research objective has been formulated to clearly state the goal of this research:

The objective of this research is to contribute to the understanding of the way information sharing influences the approach of Rijkswaterstaat Contract Managers during dialogue concerning penalty points in the exploitation phase of DBFM projects by assessing both the available data on penalty points and the approach in practice through a theoretical agency-stewardship perspective.

2.3 Research framework

The steps that are taken to conduct the research are illustrated in the research framework of Figure 2.5. The research framework is formed by defining the research object and the research perspective. The research object that is to be studied in this research involves the penalty points in DBFM projects in exploitation phase. The research perspective – that is called the theoretical framework – that is used to interpret the empirical data, will be the Agency Theory, the Stewardship Theory, additional literature study and preliminary research. The preliminary research helps to align the theoretical insights with the research that will be conducted. In this case, preliminary research consists of desk research on internal documents and informal conversations with experts and people that are involved in the field.

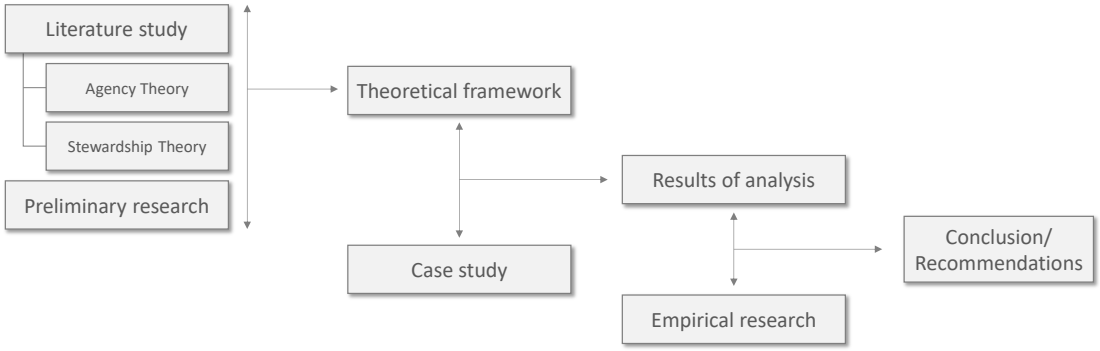

Figure 2.5 Research framework

The research perspective will result in a theoretical framework which will function as way of visualising how practice is related to the selected theories. The theoretical framework is confronted with the case study. The case study is performed to gain in-depth knowledge on selected projects. The theoretical framework is used to understand the information that is gathered from the case study. The observations of the cases can be generalised by means of the theoretical framework. The results are then confronted with empirical research after which the conclusion and potential recommendations are derived.

2.4 Research question

The following question will be answered by the conducted research:

In what way do the theories on agency-stewardship clarify the influence of information sharing between clients and contractors on the approach of Rijkswaterstaat Contract Managers regarding imposing penalty points in the exploitation phase of DBFM contract?

A couple of sub questions are formulated to structure the research and to answer the main question in the end:

1. What do the process of imposing penalty points in DBFM and the theories on Agency and Stewardship consist of?
2. What influence do the Rijkswaterstaat Contract Managers have on imposing penalty points?
3. In what way do Rijkswaterstaat Contract Managers and the contractors share information?
4. How does the process of imposing penalty points in DBFM contracts relate to the Agency and Stewardship Theory?
5. How is the approach of Rijkswaterstaat Contract Managers regarding penalty points influenced by the way both parties share information?

The first sub-question elaborates more on the background of the penalty points of the DBFM contract and studies the theory. The knowledge on the formal use of penalty points is gathered and what the contract tells about how and when to impose them. The second sub-question aims to give the formal explanation of the influence of penalty points in DBFM contracts. What is the intended purpose of imposing penalty points? How are these penalty points used in practice? How often does this happen and are there any trends? What are the responsibilities and powers of the Contract Managers? After the two first sub-questions, sub-question 3 relates to the aspect of information sharing. How do Rijkswaterstaat and the contractor share information? What is agreed upon in contract and how do they design the process themselves? This is covered by sub-question 3. The entire process of imposing penalty points is related to

the Agency and Stewardship theories by answering sub-question 4. Sub-question 5 answers the question in what way the Contract Manager is influenced by the way of information sharing.

The main question aims to link the knowledge gained from the literature to the way penalty points are used by the Rijkswaterstaat Contract Managers. With what purpose are Rijkswaterstaat Contract Managers using penalty points and how does this relate to the information shared? How does this relate to the literature and the theories on Agency and Stewardship? This leads to answering the main question.

2.5 Methodology

The research that is conducted is an exploratory research. Exploratory research is done if the researcher has little knowledge on the subject (Verschuren, Doorewaard, & Mellion, 2010, p. 180). The research will contribute to the yet unexplored topic. The research lends itself to a qualitative approach. The research design is structured in three different parts. The structure of the research design is illustrated in Figure 2.6. The first part is the creation of the theoretical framework. Sub-question 1, 2 and 3 are answered by doing a literature study on the Agency theory, the Stewardship theory, the additional literature study and the preliminary study. The additional literature study is based on a selection of literature that is suitable to the research topic and helps to understand it. The preliminary study is aimed to gather practical knowledge on the research topic. The basic knowledge on penalty points in DBFM contracts is gathered by a desk research primarily on internal Rijkswaterstaat documentation and informal conversation. The majority of this research will be qualitative. However, the imposed penalty points are gathered by means of quantitative data and explained using qualitative data. The knowledge on the theories and the penalty points has been gathered by then and this is the foundation for the theoretical framework. After the development of the theoretical framework sub-question 4 is answered.

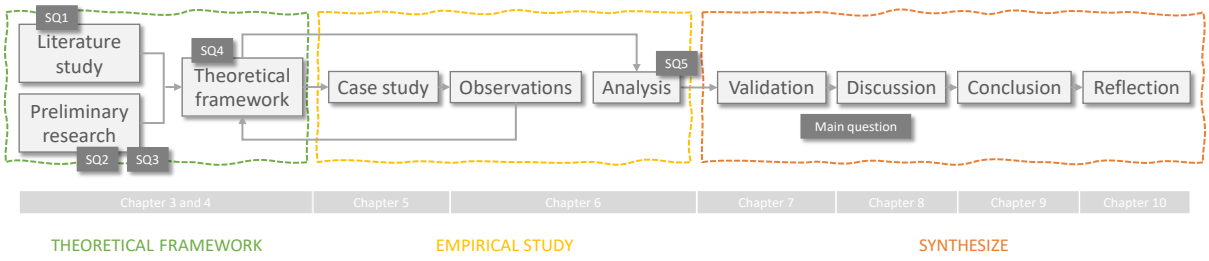

Figure 2.6 Methodology of the research

After creating the theoretical framework, the second part of the research design starts. The second part of the research design is the empirical study. This part of the research is established by conducting a case study. By means of a case study the differences and similarities between the cases are studied. This way the relationship between different aspects of the research possibly surface. Each case represents a DBFM project in the exploitation phase that is contracted by Rijkswaterstaat. The cases have been selected based on key differences in the characteristics of the projects. The scope of the project and the period of time that the project is in the exploitation phase. The known outliers of the DBFM projects in the exploitation phase are excluded from the case study to avoid misinterpretations of interdependencies. The cases are researched by looking into the available formal data on the projects and by conducting semi-structured interview with the Rijkswaterstaat Contract Managers. The goal is to comprehend their experience on imposing penalty points. To clarify what the process of imposing penalty points contains, what influences the process and what actions are taken in response to the process for the specific cases. The way in which Rijkswaterstaat Contract Managers and the contractors share information in the different cases is studied. After clarification of the latter, sub-question 5 can be answered.

The last part of the research design is the synthesizing part. In this part all knowledge and information from the theoretical framework and the empirical study is gathered and combined to finalise the thesis research. The gathered knowledge of the theoretical framework and the empirical study are synthesized to formulate the conclusion of the research. The research is validated by an expert interview. This validation interview is conducted using a semi-structured interview method. The validation of the research is followed by the discussion, conclusion and reflection after which the research is finalised.

Part II Theoretical framework

3

Theoretical perspectives

This chapter explains the theoretical perspectives that are used to support the research. First, the DBFM contract is described in detail using the available literature and scientific research. Furthermore, the role of the Contract Managers will be substantiated by relevant literature. Afterwards, the Agency theory and the Stewardship theory are discussed. Finally, the gathered findings are set side by side to compare and position them.

3.1 DBFM contract

In this paragraph the theoretical perspectives of DBFM are clarified. First, the background of the contract form is explained. Next, the motives for DBFM are described and the principles of DBFM are stated. Why was there a demand for different procurement? Lastly, the experiences and the knowledge that the sector has gained is described in section 3.1.4.

3.1.1 Background

A Public Private Partnership is a form of cooperation between a governmental institution and a private party. According to Verweij (2015b, p. 1877), the principles of PPP support the current government policies. PPP aims to deliver large construction projects with minimal impact on the environment, maximum quality and low costs (Verweij, 2015b, p. 1877). PPPs are accomplished by applying integrated contracts. These integrated contracts have been previously mentioned in chapter 1 (Rijksoverheid, n.d.).

<table>
<tr><th></th><th colspan="2">● Tender phase</th><th colspan="2">● Realisation phase</th><th colspan="2">● Exploitation phase</th></tr>
<tr><th></th><th>Identify infrastructure need</th><th>Propose solution</th><th>Project design</th><th>Project Financing</th><th>Construction</th><th>Maintenance (+ Operate)</th><th>Ownership</th></tr>
<tr><td>Traditional</td><td colspan="2">Public sector</td><td colspan="2"></td><td>Private sector</td><td colspan="2">Public sector</td></tr>
<tr><td>D&C</td><td colspan="2">Public sector</td><td>Private sector</td><td>Public sector</td><td>Private sector</td><td colspan="2">Public sector</td></tr>
<tr><td>DBM</td><td colspan="2">Public sector</td><td>Private sector</td><td>Public sector</td><td colspan="2">Private sector</td><td>Public sector</td></tr>
<tr><td>DBFM(O)</td><td colspan="2">Public sector</td><td colspan="3">Private sector</td><td>Public sector</td></tr>
</table>

Figure 3.1 Private sector engagement in PPP contracts

In Figure 3.1 the engagement of the private and public sector in project development is illustrated. In traditional contracts, contractors are only involved in the realisation phase ('construction') of the project. D&C, DBM and DBFM(O) are integrated contracts that are applied in PPPs. In DB contracts the project design is included in the contract and, adding up to this, in DBM contracts even the maintenance of the constructed project is the responsibility of the contractor. The research that is proposed will only study DBFM contracts.

The contractor in DBFM contracts is responsible for the design, the financing, the construction as well as the maintenance of the constructed project.

The principle for DBFM originated from the United Kingdom (UK) and is called Private Finance Initiative (PFI). The PFI projects were launched in 1992 in the UK (Bing, Akintoye, Edwards, & Hardcastle, 2005, p. 25). In the beginning of the 21st century this idea flew over to the Netherlands where the first infrastructure projects were procured as DBFM contracts by Rijkswaterstaat. Rijkswaterstaat is a governmental institution that is responsible for the management and development of the Dutch main roads, waterways and water systems. The organisation procures the vast majority of infrastructure construction projects in the Netherlands. The first DBFM projects were the A59 Rosmalen – Geffen in 2002 and the roadway N31 in 2002 (Court of Audit, 2013, p. 8). There were 16 DBFM projects reported from 2010 to 2018 which account for 38% of the total contract sum during that period of time (Rijkswaterstaat, 2019, p. 12).

3.1.2 Motives of DBFM

The question remains why this type of contract was developed. The Committee Private Finance of Infrastructure advocated in their report a more active use of private financing for road and rail infrastructure in the Netherlands (Commissie Private Financiering van Infrastructuur, 2008). The motives for private financing using DBFM are described in this section.

Implementation gap

The increasing complexity in projects and project planning is often difficult to handle using traditional project management. There is a gap between how the government plans projects and how the contractor implements. As a result, projects often encounter difficulties in terms of time, costs and quality. The construction sector has to manage challenging interfaces, which could have serious consequences when not properly connected. It is assumed an increased inclusiveness of actors, time and scope would make it possible to integrate lifecycle thinking and employ more expertise (Lenferink, Tillema, & Arts, 2013).

Value for Money

The contractor in DBFM contracts is responsible for a service delivery instead of product delivery. This implies that the result is examined by the quality of the service to the user and not the agreed-upon product to the client. By making the contractor responsible for the service to the user it is assumed the Value for Money (VfM) will be increased. One party will be responsible for the design, construction, financing and maintenance of the project. It is assumed the contracted party will be able to optimally align design, construction and maintenance costs this way (Koster et al., 2008, p. 6). It is expected the application of life cycle management will result in better quality for the principal and lower maintenance costs. The contractor can design a project keeping the maintenance of that same project in mind.

Expertise

The Committee Private Finance of Infrastructure expresses their concerns on the expertise of governmental organisations in their report *'Op de goede weg en het juiste spoor'*. The governmental organisations for which there are concerns are Rijkswaterstaat and ProRail. ProRail is a governmental institution that is responsible for the management and development of the Dutch railway network. The committee explains governmental organisations like Rijkswaterstaat and ProRail are entrusted the important task to deal with technically and legally complex projects. Such projects require experience, competence and continuity. The committee doubts whether the current expertise of the governmental organisations meets the requirements (Commissie Private Financiering van Infrastructuur, 2008). It is assumed that the private parties are in possession of that expertise.

3.1.3 Principles of DBFM

In the previous section, the reasons for the development of DBFM are explained. This section describes the foundation of DBFM.

Risk transfer

Besides the assumed increase of VfM, the client no longer bears the risk of 'interfaces' between the various contract components in the case of integrated contracts. This is obviously more beneficial for client than contractor. Despite the benefits for the client, these problems are certainly not solved. Lastly, the client can get rid of an important part of the care for the realisation and maintenance of a project through a DBFM contract. The client can therefore focus more on his 'core activities' (Lovink, 2014). And the risks are allocated to parties that are assumed to be able to bear them.

Private finance

The financing of DBFM contracts is provided by the contractor instead of the governmental organisations. This can be characterized as project financing and is arranged by banks and private financers. The financers have great interest in the income of the contractor and, therefore, in creating a successful project. Like the client, they want to encourage the contractor to achieve a project with good quality, within budget and on time. The Committee Private Finance of Infrastructure (2008) claim that by using this approach the financer will become an 'ally' of the client.

Often, it is argued that private financing is illogical and will be counterproductive compared to public financing. Due to the fact that the government – with AAA rating – is able to loan money at a lower rate than private financers. However, according to the committee factors, like quality, cost and time are more important relating to the eventual cost or value of the project than the 'price' to be paid (Commissie Private Financiering van Infrastructuur, 2008).

Contract duration

In Figure 3.1, the involvement of private parties in infrastructure development is illustrated. The aspects of the infrastructure development process in the realisation phase and the aspects that must be managed in the exploitation phase are shown. The parties are entered into contract for a long duration if the maintenance aspect is involved. This is the case in the DBM and DBFM contracts. The contract duration of these type of contracts is generally from 15 to 25 years (Koster et al., 2008, p. 28).

The expected useful life of the asset does not have to correspond with the duration of the DBFM contract (Koster et al., 2008, p. 134). The duration of the DBFM contract is usually connected to the economic lifetime of the asset (Koster et al., 2008, p. 7). The economic life of road constructions are generally longer than ten years. Major maintenance is carried out around twelve years after the realisation. In the 'DBFM handbook' it is stated that an optimal interpretation to the life-cycle approach can be given with a concession period from 25 to 30 years.

Output and steering mechanism

The principle of DBFM is based on the idea that the contractor delivers a service to the client. The client sets certain functional output specifications and the contractor is responsible for delivering those output specifications. These output specifications are linked to a certain performance that is expected. The client makes sure that the performance that was set out by the output specifications is delivered by means of the performance regime (Lovink, 2014, p. 43). The performance regime includes the functional output specifications, the monitoring system and a payment mechanism.

3.1.4 DBFM over the years

Besides the UK and the Netherlands, integrated contracts for construction projects that are privately financed have been applied all over the world. As was stated earlier in this chapter, the principle for DBFM

originated from the United Kingdom (UK) and is called the Private Finance Initiative (PFI). The PFI is used in Australia, Spain, Canada and many more countries in and outside Europe. The UK has 30 years of experience with the PFI contract and most research that has been conducted involves the experiences of the UK with the PFI contract. Although the Dutch DBFM contract is mostly applied with road projects, offices and courts, the PFI contract is extensively used for road projects, hospitals, schools and prisons in the UK (Partnerships UK, 2006). In section 3.1.1, it was stated that the PFI was launched in 1992 in the UK. Ever since the launch, the PFI has often made negative headlines in the UK. For instance, the early purchase of a constructed bridge due to the high toll charges and the rage that was caused by disproportionate costs for maintenance of hospitals and schools. Over the years, there have been growing concerns towards the supposed benefits of the PFI. In 2012, the PFI model was relaunched as PF2. Nowadays, there are still doubts on the way of sharing risks and it is suspected that private parties are making excessive profits on the models. The contract has been called 'a fraud on the people' by the chairman of the Royal Bank of Scotland (JPI Media Investigations Team, 2019).

Support for the PFI in the UK is declining as research shows little evidence for the suspected benefits of the PFI. It should be noted that benefits in terms of Value for Money are difficult to research (Winch, Onishi, & Schmidt, 2012, p. 15).

Koppejan and De Jong (2018) have described the history of the PPPs in the Netherlands. The research identifies the PPP practice and its contract to be based on the Anglo-Saxon model and the infrastructure management in the Netherlands to be based on the Rhineland model. This finding is supported and studied by many researchers (Hueskes et al., 2016; Koppenjan & de Jong, 2018; Koppenjan, Klijn, Warsen, Verhoest, & Hueskes, 2016; Lovink, 2014). The finding is described in the guideline of DBFM that was established by cooperation of multiple Dutch governmental institutions (Koster et al., 2008, p. 4). The differences of the Anglo-Saxon and the Rhineland model are often described by means of prioritising three dimensions: juridical, organisational and relational. The juridical dimension considers a focus on judicial proceedings and the application of the law. The organisational dimension considers a focus on administrative proceedings and involvement of the government. The relational dimension considers a focus on the importance of connecting with others. The Anglo-Saxon model prioritises the juridical dimension over the organisational and subordinates the relational dimension. On the other hand, the Rhineland model prioritises the organisational dimension over relational and subordinates the juridical dimension (Heurkens, 2017). Private parties are aware of the comparison and perceive the DBFM contract and Dutch infrastructure management as a clash between the models (Koppenjan et al., 2016, p. 10). Koppejan and De Jong (2018, p. 181) state that there is a misfit between the Anglo-Saxon based contract and the attention to collaboration and relationship based on the Rhineland model. This misfit has been recognised by both public and private parties. The researchers state that the contradicting approaches of Anglo-Saxon and Rhineland will be combined to allow for further development, however, it is unknown to what extent and how this will be done (Koppenjan & de Jong, 2018, p. 181).

Criticism of the model has increased because of major losses for private parties in the construction phase caused by design errors. The risk transfer to the private party has since come under attack. Chao-Duivis (2019) recognizes the difficulties of integrated contracts and discusses the positive aspects of the contract forms. The two phase structure of the contract forms and the application of a construction team in which the interfaces can be well organised are defined by the researcher as positive aspects and are to be used for further development of the contract forms.

3.2 Performance measurement in the public sector

De Bruijn (2006, p. 11) defines governmental organisations as 'professional organisations that deliver public services'. He argues these public services must do justice to different values and these are realised in collaboration with third parties. A governmental organisation can formulate intended performance and define performance indicators, to measure the performance of service provided by a third party. As was

stated earlier, the contractor in DBFM contracts is responsible for delivering a certain service. The contractor does not receive payment for – as in traditional contract – the completion of a certain structure, but they receive payment for the performance of this structure. De Bruijn (2006) studied how performance measurement could become a lively, content oriented and trusting activity. Hirsch and Osborne (2000) state that performance measurement helps to increase transparency and accountability. According to Lebas (1995, p. 23), performance is 'the potential for future successful implementation of actions in order to reach the objectives and targets'. This is achieved as follows: governmental organisations formulate the performance they expect to receive. This performance is translated by means of defining some performance indicators. Using these performance indicators, government officials can verify whether the intended results were realised (De Bruijn, 2006, p. 16).

De Bruijn (2006, p. 18) states that improvement of performance will often be automatically stimulated when an organisation can make its performance visible. Furthermore, this organisation will have clear goals to focus on. These are all positive effects of performance measurement. Besides the positive effects of performance measurement, there are conditions to which performance measurement may be problematic. First of all, performance measurement is problematic if the complexity of the product does not match the definable and quantifiable performance measurement. Moreover, performance measurement can be problematic when the organisation is process oriented instead of product oriented. The product and process approach are explained later in this paragraph. Performance measurement results in an incomplete image of the performance in the often very complex and dynamic environment of governmental organisations. To deal with these difficulties three different values for performance measurement have been distinguished: trust/fairness, content and liveliness. De Bruijn (2006) has introduces three design principles for performance measurement systems that do justice for the supposed values: variety, interaction and dynamics.

As was stated in this paragraph, De Bruijn (2006, p. 114) has distinguished two different types of performance measurement: focused on product and focused on process. The characteristics of the two types of performance measurements are shown in Table 3.1.

Performance measurement focused on product	**Performance measurement focused on process**
Result	Throughput
Low tolerance for more than one measure	High tolerance for using more standards
Expert judgement	Dialogue between professionals
All functions, including punishment	Strong emphasis on the function of learning
Mutual trust low	Mutual trust is high

Table 3.1 Performance measurement of products and processes (De Bruijn, 2006, p. 114)

The product approach is focused on the result. There is a single measurement, which means that the requirement may or may not be met. There is one-sided judgment which just incorporates one aspect and not related aspects. The process approach, on the other hand, focuses on the throughput or the process. The judgment is formed in dialogue between the professionals. This way, a richer picture can be created. The product approach focuses on punishment and sanctions. The process approach focusses on learning. The product and the process approach differ in the level of trust.

Often an impact follows from a measured performance. For instance, the output of a certain performance measurement is linked to a certain monetary sanction or incentive. There are two links described between the performance, the judgement of performance and the impact: indirect or direct. A direct link between those three elements implies that for a given performance, the judgement and/or impact is self-executing.

Logically, an indirect link is not self-executing. In case of an indirect link, it is indicated in advance which judgement and impact a specific performance will lead to (De Bruijn, 2006, pp. 83–86).

3.3 Contract Managers: bureaucrats and inspectors

Another interesting theory to relate to the client-contractor relationship is Lipsky's Street-Level Bureaucracy. Lipsky (1969) defines 'Street-Level Bureaucrats as people employed by government who: 1) are constantly called upon to interact with citizens in the regular course of their jobs; 2) have significant independence in job decision-making; and 3) potentially have extensive impact on the lives of their clients.' These specific public bureaucrats differ from others through their degree of discretion and relative autonomy (Johansson, 2012, p. 1034). According to Lipsky (1980) the degree of discretion of regulatory inspectors is 'a critical job element'. The degree of discretion is 'the right to choose something, or to choose to do something, according to what seems most suitable in a particular situation' (Combley, 2011, p. 241). This relates to the Rijkswaterstaat Contract Managers and their ability to decide on imposing penalty points.

Johansson (2012) applies the Street-Level Bureaucracy theory on infrastructure networks. Frontline bureaucrats within infrastructure networks are identified as cousins of street-level bureaucrats (Johansson, 2012). This resulted in distinguishing welfare bureaucrats from infrastructure bureaucrats. The welfare bureaucrats are based on the street-level bureaucrats that were primarily social workers as described by Lipsky.

	Welfare bureaucracy	**Infrastructure bureaucracy**
Service focus	Individuals	Collectives
Target group	Closed (needy, dependent; e.g. poor, sick, children, elderly)	Open (all citizens; e.g. drivers, public transport users, residents)
Individual/benefits – sanctions in legislation	Yes	No
Network participants	Clients, client organizations	Governmental authorities (municipalities, state authorities), consultants, contractors, interest groups, the public
Public officials profession	Professionals (doctors, social workers, teachers, etc.)	Bureaucrats/technicians/experts

Table 3.2 Different characteristics in the policy context (Johansson, 2012, p. 1036)

Johansson (2012) argues that infrastructure bureaucrats, unlike street-level bureaucrats that were described by Lipsky, are not welfare professionals. Infrastructure bureaucrats are employed as experts and technicians and generally technically educated. Which profoundly differs from the traditional street-level bureaucrats that is based on a welfare bureaucracy. In Table 3.2 differences between welfare bureaucracy and infrastructure bureaucracy are summarized by Johansson (2012, p. 1035). The constructed table shows five differing aspects: service focus, target group, sanctions in legislation, network participant and public officials profession. Contrary to welfare bureaucracy, infrastructure bureaucracies deliver services to collectives. This is in line with the principles of DBFM contracts.

De Bruijn and Ten Heuvelhof (2005, p. 137) introduce a dilemma that can be related to the degree of discretion of the Rijkswaterstaat Contract Managers. De Bruijn and Ten Heuvelhof describe the interaction between inspector and inspectee in their book *'Law enforcement: the game between inspectors and inspectees'*. The inspector that they describe in their book can act independently. The role of the Contract Manager of Rijkswaterstaat related to the penalty points corresponds to the inspector that is studied in the book. Enforcement is defined as 'all activities that are carried out to promote compliance with rules set by the government' (De Bruijn & Ten Heuvelhof, 2005, p. 12). The main characters involved with enforcement

are described in the book as the inspector and the inspectee. The inspector has the authority to direct the inspectee to a certain behaviour, while the inspectee has the information that the inspector needs (De Bruijn & Ten Heuvelhof, 2005, p. 13). According to De Bruijn and Ten Heuvelhof (2005), inspectors attempt to make inspectees behave in a certain way. Subsequently, inspectees will respond to this attempt and, again, inspectors can react to or anticipate on this. This creates a complicated interaction process between inspector and inspectee (De Bruijn & Ten Heuvelhof, 2005, pp. 11–12). The relationship between Rijkswaterstaat Contract Managers and contractors in DBFM projects coheres to the relationship between inspector and inspectee that is described by De Bruijn and Ten Heuvelhof (2005). The relationship between the inspector and inspectee can often be defined as coopetitive which is a neology for 'cooperative competition'. The inspector checks whether the inspectee carries the rules out as agreed upon in contract and can impose sanctions if not. However, the inspector is dependent on the cooperation of the inspectee (De Bruijn & Ten Heuvelhof, 2005, p. 27).

De Bruijn and Ten Heuvelhof (2005, p. 31) distinguish two enforcement styles: the sanction style and the pedagogic style. The enforcement styles represent the behaviour of the inspector. The sanction style is a process of sanctioning when the inspectee does not carry out the rules. The pedagogic style is defined as a process of consultation and negotiation. The inspector tries, as it were, to raise the inspectee to behave in accordance with the standard. The writers refer to this as 'a norm-conform manner'. According to the pedagogic style, the relationship between inspector and inspectee is very important.

Besides the two enforcement styles, the interaction between inspector and inspectee can also be distinguished by different methods: enforcement as a bureaucratic activity and as a strategic activity. The bureaucratic activity is characterised by standardisation of enforcement. The rules and procedures that are available to the inspector are applied. The strategic activity is based on strengthening the position of the inspector and anticipating on the behaviour of the inspectee (De Bruijn & Ten Heuvelhof, 2005, pp. 37–38). The enforcement styles and methods can be combined.

There are different types of inspectees inspectors have to interact with. The book distinguished four different inspectees (De Bruijn & Ten Heuvelhof, 2005, p. 58):

- Type 1 inspectee: the ignorant inspectee who needs the knowledge and competences of the inspector to be able to act in accordance with standards;
- Type 2 inspectee: the inspectee who plays the game with the inspector and tries to maximize his own interests in this game;
- Type 3 inspectee: the inspectee who always tries to stop the game of consultation and negotiation;
- Type 4 inspectee: the inspectee who tries to frustrate the game of consultation and negotiation.

Figure 3.2 shows the relationship between the enforcement styles an inspector could adopt and the types of inspectees. The inspector could adopt a style corresponding to the sanction style or more to the pedagogic style. The inspectee that the inspector is interacting with could be a type 1 to 4. Between the styles the inspector could adopt and the type of inspectee is the possibility of a mismatch. Two mismatches are illustrated in the figure. The top left states 'over-enforcement' and resembles a situation in which the inspector adopts a sanction style and behaves in a too strict way in interaction with the inspectee. This mismatch can seriously harm the relationship between inspector and inspectee. The bottom right states 'under-enforcement' and resembles a situation in which the inspector adopts a pedagogic style which does not cope with the strategic behaviour of the inspectee. Both the inspector and inspectee can change their behaviour and adopt a different style or strategy (De Bruijn & Ten Heuvelhof, 2005, pp. 57–58).

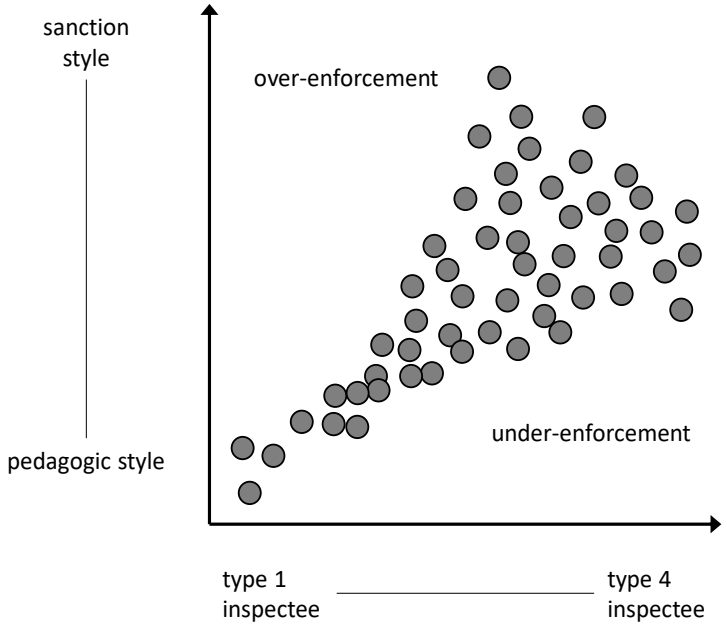

Figure 3.2 Relationship between enforcement style and type of inspectee (De Bruijn & Ten Heuvelhof, 2005, p. 58)

The interaction between the inspector and inspectee takes place in a complex network. There are also managers, political directors and third parties that influence the network of enforcement besides the inspector and inspectee. De Bruijn and Ten Heuvelhof (2005, p. 81) mention three types of echelons: the political-administrative echelon, the managerial echelon and the operational echelon. The three echelons are illustrated in Figure 3.3.

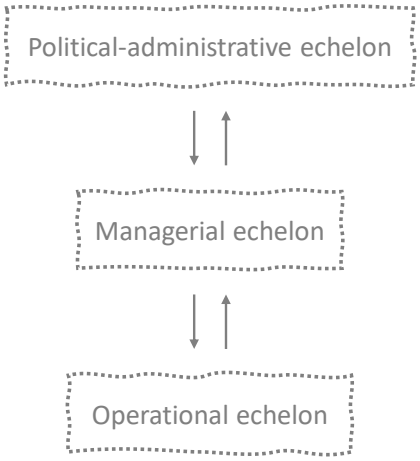

Figure 3.3 Echelons of enforcement

The interaction of the inspector and the inspectee takes place at the operational echelon. On the managerial echelon, management values the control of projects and processes. The managers are further away from the interaction between inspector and inspectee and, therefore, are more focused on the results of the negotiations. The managers would avoid variety among projects and processes and aim for uniformity and equality. Moreover, after the negotiations they expect the inspectors to be able to account for the results. The managerial echelon is influenced by the political-administrative echelon. Social sensitivity is

central to the officials in the political-administrative echelon. They are accountable for the actions of the enforcement organisations towards the society (De Bruijn & Ten Heuvelhof, 2005, pp. 81–85).

Earlier in this paragraph it was stated that the inspector has the authority to direct the inspectee to a certain behaviour, while the inspectee has the information that the inspector needs (De Bruijn & Ten Heuvelhof, 2005, p. 13). The inspectee owns and processes the information from the physical-technical system that the inspector depends on. Information asymmetry arises between the inspector and the inspectee. The information asymmetry has two aspects: *need to know*- and *nice to know*-information. The *need to know*-information is the formal information that the inspector can request from the inspectee. The *nice to know*-information can only be obtained by operating in the field (De Bruijn & Ten Heuvelhof, 2005, p. 135). Transparency and complete exchange of information is recommended to manage and limit the risk of social damage and quickly detect problems that may cause social damage. However, this transparency is discouraged in terms of limiting risks of deviance of the behaviour of the inspectee. An unwilling inspectee could take advantage of the transparency of the inspector. Based on the presence of information asymmetry, the relationship between inspector and inspectee can be linked to the principal-agent relationship. This relationship will be explained in paragraph 3.4.

Bao and Bouthillier (2013) conducted a research based on a literature review on information sharing in supply chains. They distinguish three different dimensions of 'major indicators of the level of operational information sharing in supply chains': content dimension, spatial dimension and time dimension. The indicators of the content dimension are the *number of types of information being shared* and the *level of detail*. The indicators of the spatial dimension are the *distance of information sharing* and the *width of information sharing*. The indicators of the time dimension are the *timeliness of sharing* and the *frequency of sharing* (Xiaowen & France, 2013, p. 8).

3.4 Agency Theory

The principal-agent relationship refers to a situation in which one person or entity (the agent) acts on behalf of or is hired to perform a service to another person or entity (the principal). This relationship is similar to the relationship between a client and a contractor. The relationship between principal and agent is illustrated in Figure 3.4. The figure illustrates the relationship between the owner of a corporation and executives. The owner becomes a principal when he or she hires an executive or agent to perform a service. The information asymmetry that was discussed in paragraph 3.3, is positioned between the principal and the agent. The agent that performs the work for the principal is in possession of valuable information. The agent is able to withhold the information for the principal, however, it is unknown to the principal what he or she does not know. The problem arises when on top of the fact that one party has information that the other has not, the parties' interests are not aligned. The Agency theory assumes both parties – the principal as well as the agent – are rational beings (rationally bounded) and both attempt to maximize their own benefits (self-interested) with minimal investment (opportunism) (Davis, Schoorman, & Donaldson, 1997, p. 20).

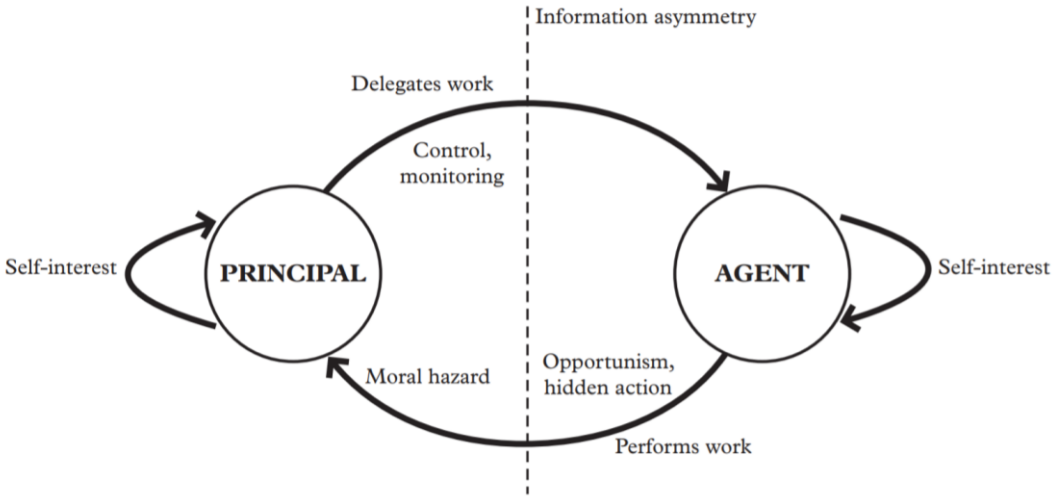

Figure 3.4 Principal agent relationship (Van Slyke, 2006)

Losses for the principal as a result of the asymmetric information might be decreased 'by imposing control structures upon the agent' (Davis et al., 1997, p. 20). Such control structures clearly relate to performance measurement systems, that were explained in paragraph 3.2. By monitoring and aiming to control the agent, the principal may try to minimize the risks of deviance and damage. According to Jensen and Meckling (1976) the control mechanisms are incorporated to reduce agency costs for the principal.

Model of Man

The concept of Model of Man has been described in different ways by different researchers. In this research, the aspects relevant to the relationship of the client and the contractor are incorporated in the dimension of Model of Man. As was previously mentioned, the Agency theory assumes that the principal as well as the agent are rational beings. According to Davis et al. (1997, p. 22), the model of man that underlies the Agency theory is based on the idea that all beings are rational and aim to maximize their own utility. This perspective is based on studies of an economic background. The interest of both the principal and the agent are focused on maximizing their own utility. It is not their goal to maximize the utility of the other. The theory assumed that both the principal and the agent are self-interested. Furthermore, given they are self-interested, the principal and the agent would rationally maximize their utility despite potentially causing losses to the other party. This is defined as opportunistic behaviour.

Motivation

The Agency theory assumes that principal and agent are self-interested and that they are extrinsically motivated. Extrinsically motivated means that an individual is not motivated by the task itself, but by the advantages that can be gained. The advantages translate to incentives that motivate the individual. For example, monetary incentives like bonuses.

Trust

Trust is defined as 'to believe that someone is good and honest and will not harm you, or that something is safe and reliable' (Combley, 2011). According to David et al. (1997, p. 22), the self-interested principals and agents aim to maximize their own utility and will put their own interests in favour of the interest of the other party. There is a substantial chance that the interests of the agent differ from the interest of the principal. The goals of engagement of the principal possibly differ from those of the agent. In a hypothetical relation wherein two parties behave opportunistic and have differing goals, there is a chance that both parties act in a way that may cause negative consequences for the other party. Trust seems to be opposed to the characteristic of opportunism in the Agency theory. Agency theory assumes low levels of trust.

Approach

In Agency theory, monitoring and incentive alignment are used to cope with the divergence of interests between principal and agent (Fama & Jensen, 1983). In terms of monitoring, the agent is 'watched' by the principal and the principal checks whether the agents acts accordingly. In terms of incentive alignment, the principal attempts to match the interests of the agent to the principal's. If there are difficulties with monitoring an agent according to Jensen and Meckling (1976), incentive alignment is the best control mechanism if monitoring is difficult.

3.5 Stewardship Theory

The Stewardship theory refers to a similar situation as the agency theory in which one person or entity acts on behalf of or is hired to perform a service to another person or entity. In contrast to the self-interested motivation in the Agency theory, the Stewardship theory assumes motives that are aligned with the principal's (Davis et al., 1997, p. 21). The Stewardship theory refers to 'the agent' as 'the steward' and to 'the principal' as 'the shareholder'.

The relationship between shareholder and steward is illustrated in Figure 3.5. The steward protects and maximizes the shareholder's wealth and aims to benefit the organisation. The relationship between stewards and shareholders is based on trust instead of control mechanisms. Davis (1997) argues that the shareholder-steward relationship would be suited for a longer time frame compared to the Agency theory. Lastly, it is stated the objective of the Agency theory is cost-control oriented and that of the Stewardship theory performance enhancement.

Opposed to the Agency theory that is based on individualism and self-interest, the Stewardship theory is based on the idea that the stewards are more collective minded. This does not make stewards solely intrinsically motivated. They are aware of both personal needs and organisational goals. Stewards believe by accomplishing collective goals, their personal needs will be achieved (Davis et al., 1997).

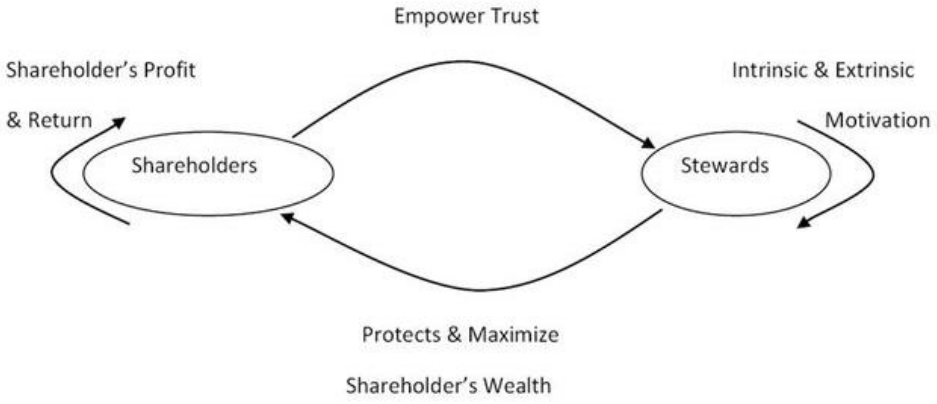

Figure 3.5 Shareholder steward relationship (Al Mamun, Rafique Yasser, & Ashikur Rahman, 2013, p. 43)

The Stewardship theory states that stewards are at all times motivated to protect and maximize the wealth of the shareholder. The shareholder is interested in profit and return. According to the theory, the steward will in any situation try to benefit the needs and profit of the organisation. Therefore, the steward can be trusted by the shareholder. If a steward can be entirely trusted, this means that there is no need for control mechanisms and structures (Chrisman, 2019).

Model of Man

As was stated in paragraph 3.4, concept of Model of Man has been described in different ways by different researchers and the aspects relevant to the relationship of the client and the contractor are incorporated in the dimension of Model of Man. Opposed to the Agency theory, the Stewardship theory is based on the idea that the agent attempts to maximize and protect the wealth of the principal. This perspective is based on studies of a psychological and/or sociological background. Stewards are more collective minded instead of self-serving. Stewards aim to maximize the collective utility. The Stewardship theory assumes that the interests of the shareholders and stewards are aligned (Davis et al., 1997, p. 24). Stewards do not show opportunistic behaviour. The theory of Stewardship is based on psychology and sociology.

Motivation

The fact that stewards are more collective minded does not make them solely intrinsically motivated. stewards are both intrinsically and extrinsically motivated. The stewards will try to serve the needs of the organisation. Chrisman (2019, p. 1058) states that the interest of the steward is to achieve the goals of the shareholders. This way, the goals of both parties are automatically aligned.

Trust

If the steward has the same goals as the shareholder, he will do his best to achieve them so as not to harm any of the parties. The interest of the steward are aligned with the shareholder's interests. The steward maximizes and protects the wealth of the shareholder. In this way, there is no reason for distrust and, according to the Stewardship theory, there must be high levels of trust. According to the Stewardship theory, the shareholder will then empower trust.

Approach

Monitoring and incentive alignment will fail to encourage stewards (Tosi, Brownlee, Silva, & Katz, 2003, p. 2056). Stewards are motivated by empowering structures and not by the formal rules of the game.

3.6 Comparison and collocation

The quarterly payment to the contractor for DBFM projects depends on the measured performance monitored in the systems. Two discounts have been identified in section 2.2.2: the Availability Discount and the Performance Discount. The Availability Discount is managed by a direct link. The impact of the performance that is measured in the monitoring systems is self-executing. The discount is determined in advance and is directly linked to the payment without the possibility of debate. The Performance Discount is managed by an indirect link. The impact of the performance is not self-executing. In case of an indirect link, it is indicated in advance which judgement and impact a specific performance will lead to (De Bruijn, 2006, pp. 83–86). This is explained in paragraph 4.2 regarding the DBFM projects in the exploitation phase.

The performance regime in DBFM contracts includes the functional output specifications, the monitoring system and a payment mechanism. The self-monitoring of the contractors in DBFM contracts relates strongly to the Stewardship theory as this is an empowerment of the contractor. This may be purposely implemented during the development of the contract to encourage the contractor in showing Stewardship like behaviour. However, this presumption is substantiated by means of the literature or the acquired knowledge from practice. The extensive manner of monitoring in DBFM is related to high levels of control what is related to the Agency theory. The functional output requirements that are set in the contract relate more to the Stewardship theory due to low levels of control.

The network of enforcement that was explained in paragraph 3.3 is applied to the interaction process regarding penalty points and has been illustrated in Figure 3.6. The political management is located at the top of the figure. The political management refers to the political echelon that is mentioned in paragraph 3.3. Social sensitivity is the priority of the political echelon and it interacts mainly with the managerial echelon. The managerial echelon is called 'management' in Figure 3.6. Not all managers in the managerial

echelon are in direct contact with the political echelon. For example, the portfolio managers that are responsible for more than one project will sooner be approached by the political echelon than the project managers of specific projects. The project managers of specific projects are more concerned with the day-to-day tasks on the project. The managerial echelon interacts with the operational echelon. The operational echelon is where the Contract Manager and the contractor interact and discuss on penalty points. There are endless combinations possible in the network. Contract Managers can be in contact with other Contract Managers. Different Contract Managers can be in contact with the same management. Contractors can be in contact with each other. One contractor can participate in consortia of different DBFM projects. As one can imagine, the network of enforcement can get fairly complicated. On top of that, the numerous third parties that are involved in the construction projects are left out of the figure.

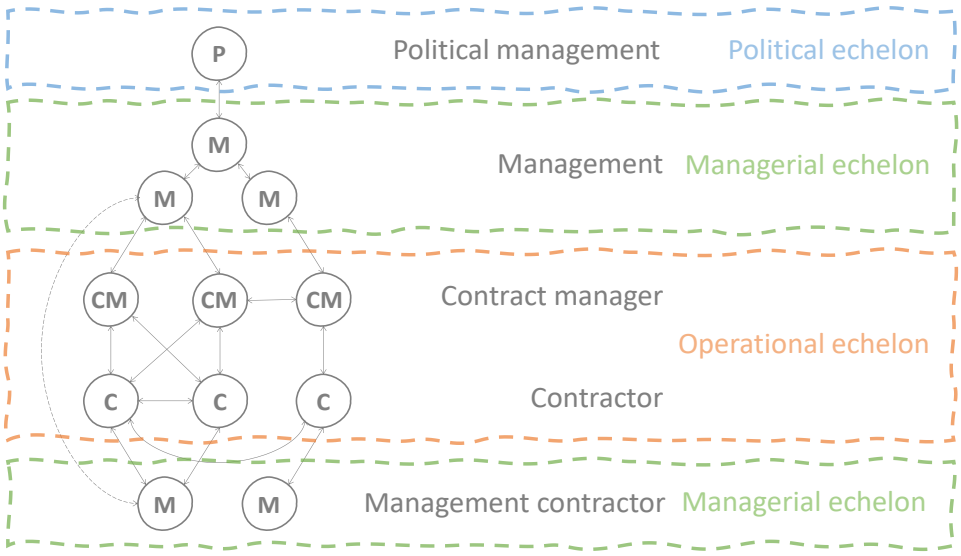

Figure 3.6 Network of enforcement

Generally, the operational echelon does not interact with the political echelon. However, tensions can arise between the political echelon and the operational echelon. The political preferences can conflict with the views of the inspector, in this case the Contract Manager. On the other hand, what may be reasonable for a Contract Manager, can be politically unacceptable (De Bruijn & Ten Heuvelhof, 2005).

The Contract Manager is on the border of the operational echelon and the management echelon. The Contract Manager is 'an actor who can both play the managerial game and understand the profession' (De Bruijn, 2006, pp. 90–91). De Bruijn (2006) calls this actor a *boundary spanner*. This boundary spanner needs space or freedom to give meaning to the central incentives and towards the professionals in the operational echelon. Furthermore, the space is required to contribute to the accountability towards the managerial echelon. Finally, the boundary spanner needs the space to establish a decentralised incentive structure (De Bruijn, 2006, pp. 90–91). This required space relates to degree of discretion that is mentioned in practice.

The indicators of the levels of information sharing of Bao and Bouthillier (2013) that have been introduced are summed on page 43. The focus of this research is the interaction between the Contract Managers of Rijkswaterstaat and the contractor. Hence, for this research the spatial dimension is restricted to information sharing between these parties. In addition to the dimensions, it is studied how information is shared between the parties. Are they using specific systems?

Indicators of the levels of information sharing:

1. Content dimension
    a. Number of types of information being shared
    b. Level of detail
2. Spatial dimension
    a. Distance of information sharing
    b. Width of information sharing
3. Time dimension
    a. Timeliness of sharing
    b. Frequency of sharing
4. *System dimension*
    a. Types of mechanisms for information sharing
    b. Characteristics of interaction

The Agency theory as well as the Stewardship theory acknowledge the occurrence of information asymmetry between two entities. De Bruijn and Ten Heuvelhof (2005, p. 135) specify two aspects of information asymmetry. The first is the *need to know*-information. This is about information that can be requested by the inspector and is often written down in contract. The 'hard facts'. These formalities of the *need to know*-information partially eliminate the concept of information asymmetry. However, the inspectee can still aim to disrupt this by delaying the information provision. The second is the *nice to know*-information. *Nice to know*-information is qualitative information that is desired to interpret the value of the *need to know*-information. The 'soft' information. It enables the inspector to validate whether the information received is reliable and to discover the meaning of the information.

The *need to know*-information in this case is formulated in the contract and the contractor is formally required to deliver this information to Rijkswaterstaat. As was stated earlier, the *nice to know*-information can only be obtained by operating in the field (De Bruijn & Ten Heuvelhof, 2005, p. 135). The Agency and the Stewardship theories define different dimensions in which is explained in what way the actors deal with this information asymmetry. In Table 3.3 the dimensions that are derived from the literature are illustrated. These dimensions are aspects of the literature that have been mentioned in the previous paragraphs.

Dimension	**Agency theory**	**Stewardship theory**
Theoretical basis	Economics	Psychology and sociology
Principal-agent relation	Goal conflict	Compatible or aligned goals
Model of Man	Economic man	Self-actualizing man
Behaviour	Self-serving	Collective serving
Agent's motivation	Mainly extrinsic	Intrinsic and extrinsic
Trust	Low levels of trust	High levels of trust
Governance mechanisms	Monitoring and incentives	Empowering structures
Approach	Control (distrust)	Collaboration (trust)

Table 3.3 Overview of dimensions of the theories

Different dimensions of the Agency and Stewardship theories are explained in Table 3.3. The dimensions that will be used for this research are the Model of Man, motivation, trust and approach. The research is conducted using a case study. First, each case will be defined in terms of the Model of Man which characterises the Contract Manager. Next, the motivation of the Contract Manager is analysed by stating whether this is mainly extrinsic of both intrinsic and extrinsic. Furthermore, it is determined whether the Contract Manager experiences low or high levels of trust. Finally, the approach of the Contract Managers when deciding on whether to impose penalty points are characterised to be more control oriented of more collaboration. This is based on the demand for either more monitoring and incentives or more empowering structures. This way the four dimensions build up and enable a substantiates analysis on the approach of the Contract Managers.

The question remains how these different cases relate to each other and to the theories of Agency and Stewardship. This is done by means of an axis. The axis visualises a two-dimensional continuum on which the Agency and Stewardship theory are located. An example of the axis that will be used for this research is illustrated in Figure 3.7. The axis is not an exact representation of reality or based on quantitative values. The axis is intended to give the reader a sense of the differences and similarities of the cases that are studied in relation to the theories.

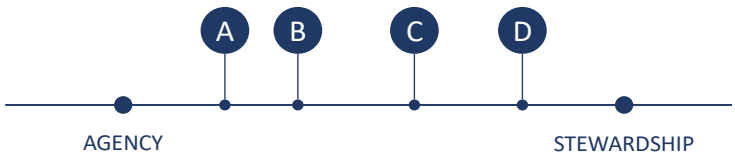

Figure 3.7 Example of axis

This axis is the theoretical framework that is used to analyse the data and subsequently visualise how the projects are related to each other.

3.7 Intermediate conclusion

The literature study has pointed out the background, motives, principles and the past of the DBFM contract. The research on the payment mechanism of DBFM contracts relates to the literature on performance measurement in the public sector (De Bruijn, 2006). The literature defines various difficulties in measuring performance. They distinguish two types of approaches in performance measurement: product and process. Moreover, direct and indirect links between the judgement and the impact of the performance. Three success factors of such performance measurement systems are described: variety, interaction and dynamics.

The role of the Contract Manager in the research is related to various corresponding roles that are described in the literature. The explanations of the infrastructure bureaucrat and the inspector relate to the role as they are both describe an individual who must assess another individual or party. This individual is operating in a network involving a political, managerial and operational echelon. The individual acts as the *boundary spanner* in the operational echelon. The individual can adopt different styles: the sanction style or the pedagogic style. The sanction style relates to the Agency theory and the pedagogic style relates to the Stewardship theory.

Theoretical framework

The Agency and the Stewardship theory describe differences of the characteristics of the individuals that are involved in the cooperation. The theories differ in characterising the dimensions. The dimensions that are chosen for this research are model of man, motivation, trust and approach. It is assumed that these

dimensions can describe the important aspects related to the interaction between the client and the contractor without overlapping. The last dimension is of primary importance to this research. The remaining dimensions help to clarify the dimension *approach*.

4

Empirical exploration

First, the DBFM projects that have been studied are briefly described in the first paragraph (4.1). Next, the payment mechanism and the process of imposing penalty points are described based on the internal documentation of Rijkswaterstaat in paragraph 4.2. The way information is shared between client and contract is presented in paragraph 4.3. In paragraph 4.4, the knowledge that was received by the informal conversations with the Rijkswaterstaat Contract Managers is explained.

4.1 Description DBFM projects

In this paragraph each DBFM project that is included in the research is described briefly. The description will contain information of what was constructed by the SPC and the background of the projects. In Figure 12.2 the projects are marked on the map, which will give a clear illustration of the location of each project. Furthermore, in Figure 12.3 the contract start, the availability date and the end of the contract are illustrated by means of a timeline. The figure shows that the first DBFM project was awarded in 2002 and the last DBFM that was planned for procurement at the end of 2019. There are currently no DBFM projects planned for tender in the future.

Figure 4.1 shows the net present value of the DBFM projects that are included in this research. The graph shows that the values of the projects are far apart.

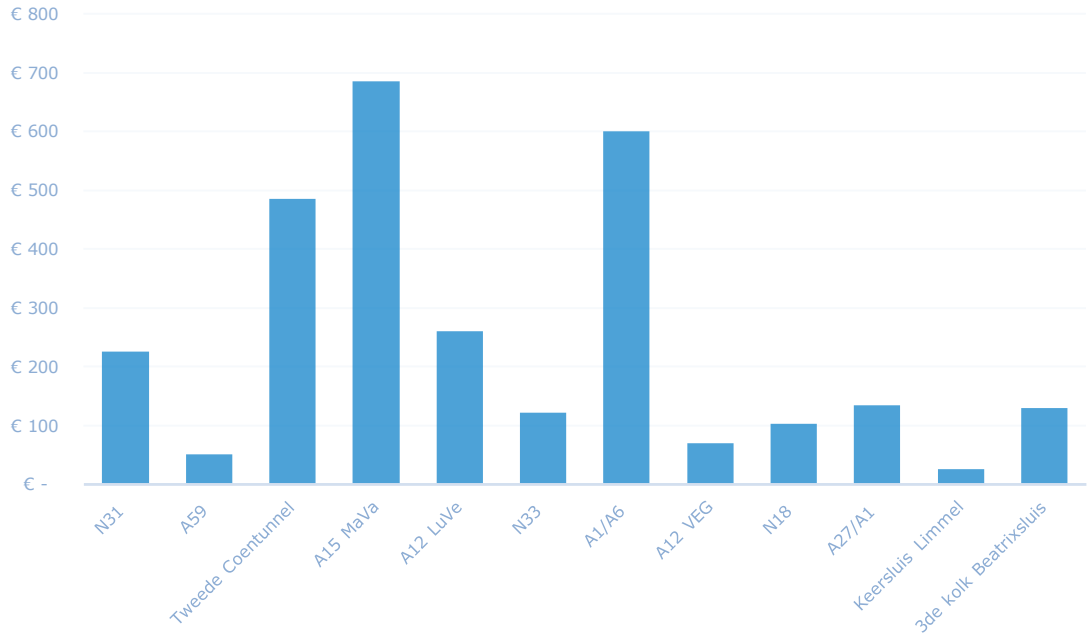

Figure 4.1 DBFM projects in exploitation (net present value in millions)

N31 Leeuwarden - Drachten

Wâldwei: Ballast-Nedam, BAM, Dura Vermeer

80% of the exploitation phase completed on 1-1-2020

The doubling of 13 kilometres of roadway between Hemriksein and Nijega was the second DBFM project to be procured in the Netherlands and the first DBFM project procured by Rijkswaterstaat. Besides the doubling of the roadway, the project involved the construction of an aqua duct. The contract started at the end of 2003 and the construction was finished at the end of 2007. The consortium Wâldwei is responsible for the maintenance for a period of 20 years, which means that there is only three years of contract left.

A59 Rosmalen – Geffen

Poort van den Bosch: BAM, Boskalis, Fluor

94% of the exploitation phase completed on 1-1-2020

The A59 from Rosmalen to Geffen is the first infrastructure construction project procured by the Dutch government via a DBFM contract. This contract differs from the other DBFM projects in this paragraph as the Province of North-Brabant is the client instead of Rijkswaterstaat. Before the contractor turned the roadway into a highway, there were concerns about the safety of the roadway and the frequent traffic jams. The consortium Poort van Den Bosch finished the construction in 2005 and was responsible for the maintenance of the highway until the end of 2020. The project is the first PPP infrastructure construction project to come to an end in the Netherlands.

A10/A5/N200 Second Coentunnel – Westrandweg – Halfweg

Coentunnel Company: Arcadis, Dura Vermeer, Besix, TBI

25% of the exploitation phase completed on 1-1-2020

The project Second Coentunnel is part of the program Schiphol-Amsterdam-Almere (SAA). The SAA program aims to achieve better accessibility of the northern Randstad. The realisation phase of the Second Coentunnel started in 2009 and was therefore the third DBFM contract. The investment costs of the Second Coentunnel were nearly ten times as big as the first two projects. The Coentunnel was a major bottleneck in the area and the area was facing serious problems in terms of traffic and safety. The consortium Coentunnel Company was responsible for the construction of a tunnel and various additional lanes in the area. The consortium will maintain the infrastructure for 25 years (Rijksoverheid, 2014).

A15 Maasvlakte – Vaanplein

A-Lanes A15: Ballast-Nedam, John Laing, Strabag, Strukton

20% of the exploitation phase completed on 1-1-2020

The A15 is an important connection between the Rotterdam port and industrial area and the European hinterland. The traffic intensity was expected to increase due to the construction of the Second Maasvlakte and the construction of new homes in the area. In addition to the road traffic, the capacity for shipping at the Botlek bridge was insufficient due to the increase of shipping after the construction of the Second Maasvlakte. The contractor A-Lanes is responsible for the expansion of the highway and the construction of a new bridge. Construction started in 2010. The project has been under pressure due to design errors in the bridge. The contract was officially completed in 2015 and the contractor is responsible for the maintenance for 20 years.

A12 Lunetten – Veenendaal

Poort van Bunnik: BAM

36% of the exploitation phase completed on 1-1-2020

The A12 Lunetten – Veenendaal consisted of the construction as well as expansion of the lanes between the Lunetten junction and the city of Veenendaal. Additionally, the works included the renovation and modification of several over- and underpasses. Besides, the consortium Poort van Bunnik is responsible for the construction of various fauna passages and applying noise mitigations. The construction of the project started in 2010 and the infrastructure was completed in 2013. The consortium Poort van Bunnik is responsible for the maintenance for 20 years.

N33 Assen – Zuidbroek

Poort van Noord: BAM

26% of the exploitation phase completed on 1-1-2020

The scope of the N33 project for the SPC consists of doubling the number of lanes from predominantly 1x2 to a 2x2 motorway between the junctions of Assen-Zuid and Zuidbroek. In addition, the project entails a viaduct and a movable bridge. The construction of the project started in 2013 and was completed at the end of 2014. The consortium Poort van Noord is responsible for the maintenance of the infrastructure for 20 years.

A1/A6 Diemen – Almere Havendreef

SAAone: VolkerWessels, Boskalis, Hochtief, DIF

10% of the exploitation phase completed on 1-1-2020

In addition to the Second Coentunnel, the project A1/A6 Diemen is also part of the program Schiphol-Amsterdam-Almere (SAA). The consortium SAAone is responsible for the widening of the roadway A1 from Diemen to Muiderberg and of the roadway A6 from Muiderberg to Havendreef. This project has one of the highest investment costs of all DBFM projects. The construction of the project started in 2013 and was finished in 2017. The construction was finished three years earlier than was planned. The consortium SAAone is responsible for 25 years of maintenance of the infrastructure.

A12 Veenendaal – Ede – Grijsoord

Heijmans A12 B.V.: Heijmans

22% of the exploitation phase completed on 1-1-2020

The SPC Heijmans A12 B.V. was contracted by Rijkswaterstaat to construct the widening between the trajectories Ede-Grijsoord and Veenendaal-Ede. Especially the trajectory Ede-Grijsoord was seen as a bottleneck. This trajectory will be widened from 2x2 to a 2x3 roadway. The roadway is partly located in the nature reserve the Veluwe, which demanded an ecology minded approach from the contractor. The construction started in 2014. The construction took almost two years and was finished at the end of 2016. Heijmans A12 B.V. is responsible for the maintenance of the roadway for 16 years.

N18 Varsseveld – Enschede

Noaber18: VolkerInfra, DIF

7% of the exploitation phase completed on 1-1-2020

The project N18 is a newly constructed road between Varsseveld and Enschede with a length of approximately 45 kilometers. The road is part of the national main road network, but primarily has a regional and local function. Between Groenlo and Haaksbergen, the road is a 2x1 roadway and a 2x2

roadway between Haaksbergen and Enschede. The road between Groenlo and Enschede is also accessible for slow (agricultural) traffic. The aim of the project is to improve road safety and quality of life on and in the vicinity of the N18. The sub-objective is to improve accessibility and regional economic development. Construction of the project started in 2016 and was completed in 2018. The consortium Noaber18 is responsible for the maintenance of the infrastructure of 25 years.

A27/A1 Amersfoort – Eemnes – Utrecht

3Angle: Heijmans, 3i Infrastructure, Fluor

4% of the exploitation phase completed on 1-1-2020

The project A27/A1 concerns a widening of the existing A27 from 2x2 to 2x3 lanes with a space reservation, so that a possible widening to 2x4 or a possible future new public transport connection between Almere and Utrecht is spatially possible. A rush-hour lane is being constructed between the connection Ring Utrecht and the Bilthoven connection. A widening of the existing A1 from 2x2 to 2x4 lanes. The construction started in 2017 and was completed in 2019. The consortium 3Angle is responsible for the maintenance of the infrastructure for 25 years.

Keersluis Limmel

Keersluis Limmel Company: Besix Group, Agidens InfraAutomation, Rebel Group

6% of the exploitation phase completed on 1-1-2020

The Keersluis Limmel is part of the Maasroute subprogramme. The purpose of the Maasroute subprogramma is to make the Maas and associated canals and waterways between Maastricht and Weert navigable for shipping. The Keersluis Limmel is a multidisciplinary project that combines the following disciplines: concrete construction, hydraulic engineering, steel construction, mechanical engineering and installation technology. The SPC Keersluis Limmel Company B.V. was, among other things, responsible for the maintenance of all functions of the object during the realisation phase, the design and construction of a new flood barrier and the demolition of the existing lock complex. The construction started in 2015 and was completed in 2018. Furthermore, Keersluis Limmel Company B.V. was contracted to manage and maintain the constructed flood gate and fixed bridge for a period of 30 years.

3rd Kolk Beatrixsluis

Sas van Vreeswijk: Besix Group, RebelValley, TDP, Heijmans, Jan de Nul

2% of the exploitation phase completed on 1-1-2020

The Lekkanaal is a very important domestic waterway connection between the ports of Amsterdam and Rotterdam. The Beatrixsluis is located in the Lekkanaal just below the city of Utrecht and is the only sluice on this waterway from Amsterdam to Rotterdam. As the ships are passing more frequently and getting bigger, Rijkswaterstaat wanted to prevent the sluice becoming a bottleneck. Therefore, it was decided to construct a third lock next to the two existing locks. Besides the construction of a new lock, the contractor Sas van Vreeswijk is responsible for the widening of the front ports between the Lekkanaal and the lock complex and the relocation of the primary flood defence. The construction of the lock started in 2016 and was completed in 2019. Sas van Vreeswijk will maintain the 3rd Kolk Beatrixsluis for 27 years.

4.2 Payment mechanism and penalty points

The calculation of the periodic payment to the contractor based on the availability payment and the discounts according to the contract have been explained in chapter 2. The formal way of imposing penalty points has been laid down in the contract. In this paragraph the informal way of imposing penalty points is clarified.

The process in which Contract Managers decide on imposing penalty points is illustrated in Figure 4.2. Before this process is described, it should be made clear that this process is different for each project. The process is explained in an abstract manner. The details of four specific DBFM projects are explained by means of a case study in chapter 5.

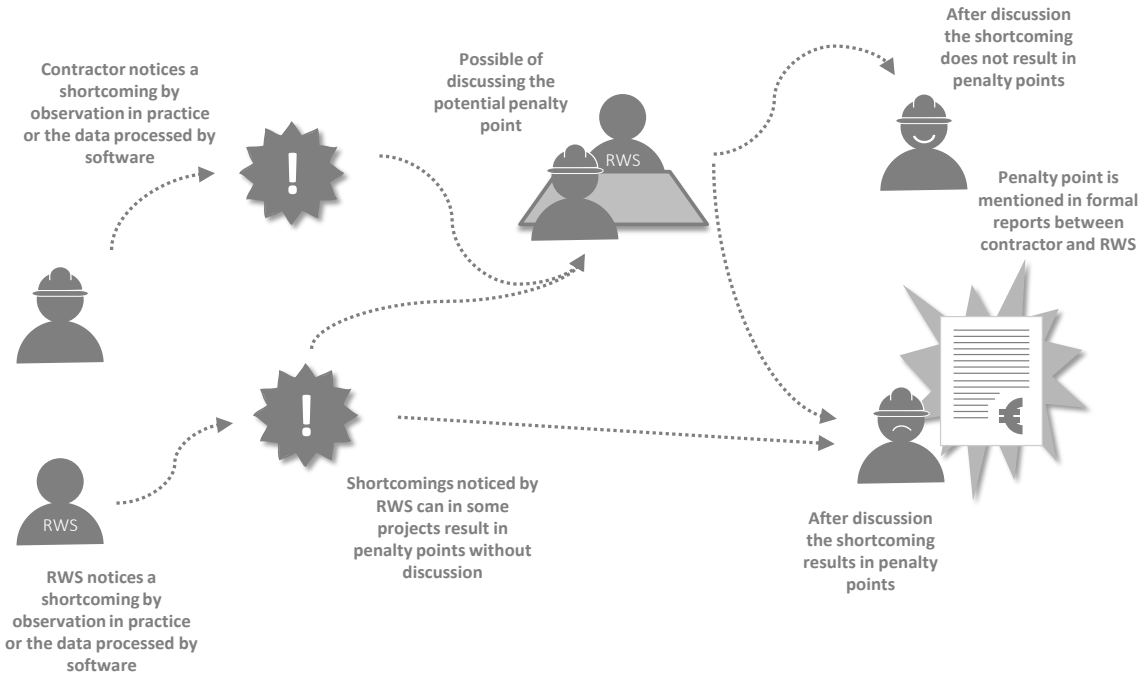

Figure 4.2 Decision-making process on penalty points

The process starts with noticing a shortcoming. The requirements for the service are defined in the contract. There are three categories defined in the contract: safety, maintenance and process. The safety requirements stimulate the contractor to make sure that the service is delivered according to the safety standards. The maintenance requirements stimulate the contractor to deliver high quality of the asset. The projects that were procured in a later period of time have more requirements that involve process requirements. Process requirements define how contractors, for example, design a planning or defines what type of software or programs are required to be used to monitor the performance. The contractor is responsible for the monitoring of the output of the project. However, there are multiple possible software programs and systems. The software differs per contractor. Generally, a shortcoming is noticed by the contractor after observation in practice or the data that is processed by the systems. It may be the case that the Contract Manager or another Rijkswaterstaat inspector or official notices a shortcoming. In most projects, Rijkswaterstaat can access the systems or programs of the contractor every hour of every day or they can request the data and the contractor is required to deliver the data within 24 hours. Some contractors deliver the data periodically. This can vary per project from every month to once in three months. Most Contract Managers of Rijkswaterstaat have mentioned that nine out of ten times the contractor notices and reports a shortcoming. The contractor is responsible for noticing and reporting the shortcoming in most DBFM contracts. However, it is possible that a shortcoming is overlooked by a contractor and the Contract Manager of Rijkswaterstaat notices the shortcoming instead. One of the

Contract Managers of Rijkswaterstaat has stated the team has an agreement with the contractor that if a shortcoming worthy of penalty points is noticed by Rijkswaterstaat this automatically results in penalty points. There is no debate possible even if a penalty point would not be in the line with the reasonableness and fairness.

After the shortcoming has been notified, the contractor and the Contract Manager will be in contact in most of the cases. Formally speaking, the contractor has to notify Rijkswaterstaat by sending a letter to report the shortcoming and possibly dispute the shortcoming. Nevertheless, mostly this process will be more informal. This can be via e-mail, phone call or during a meeting face-to-face. The contractor then can explain why the shortcoming is worthy or unworthy of one or more penalty points. The contractor always has the right to be heard. The discussion between Rijkswaterstaat and the contractor takes place between the Contract Managers and the Advisors if there are any on the project. Some Contract Managers have explained that the potential or imposed penalty points are discussed during IPM team meetings. After discussion and when a decision has been made, the penalty points are registered in a formal letter. In this formal letter the Net Availability Payment is determined.

The most formal way of imposing penalty points is only per letter. One of the parties sends a shortcoming letter and then there will be response letters to that. These letters are sent between the Project Managers. The most informal way is to discuss the shortcoming in person, via the telephone or via e-mail. After this, the contractor sends the shortcoming letter to Rijkswaterstaat as a formality and the Performance Discount is processed in the Availability Payment and stated on the Periodic Statement.

The discussion between Contract Manager and contractor on the culpability of the shortcoming is central to this research. The Contract Managers pursue the ‘Stramien Boetepunten’ – which is a kind of guideline when it comes to penalty points. Three different categories of penalty points can be distinguished: safety, maintenance and process. The former must always be imposed according to the ‘Stramien Boetepunten’. On the latter two, the Contract Manager of Rijkswaterstaat considers whether the contractor is culpable for the shortcoming. If the contractor is not culpable for the shortcoming, there will be no penalty points imposed. If it is the case that the shortcoming does not affect a safety requirement, but the contractor is indeed culpable, there is still a possibility that no penalty points will be imposed. The contractor has the option to propose a control measure with an appropriate repair period. If the Contract Manager of Rijkswaterstaat agrees and the contractor implements the control measure within the agreed repair period, the potential penalty points are removed. However, all of the Contract Managers emphasize that they MAY impose penalty points. They do not have to. There are known situations in which it was even chosen not to impose penalty points of the safety category. So, exceptions to the rules are made.

The Primus inter Pares (PiP) consultation was initiated by the Contract Managers to share information and experiences. Contract Managers of DBFM projects can participate in this consultation on a voluntary basis. Attendance to the PiP consultation is not mandatory. Contract Managers can discuss difficult cases among themselves during this Pip consultation. Discussing penalty points is demand-driven.

All Contract Managers of the DBFM projects described in paragraph 4.1 were asked to gather the data on penalty points. The data is not collected centrally at Rijkswaterstaat. The Contract Managers do not adhere to the same format and collect their data individually in their own way. Some of the collected data has been lost with the departure of staff of an IPM team. Some of the data is well hidden in the organisation. The data that the Contract Managers of the DBFM projects delivered resulted in a varied data set. In Figure 4.3 the quantitative data of the penalty points have been compared in a graph. The end of the construction is defined as year 1 of each project. The general trend of imposing penalty points seems to be going downward.

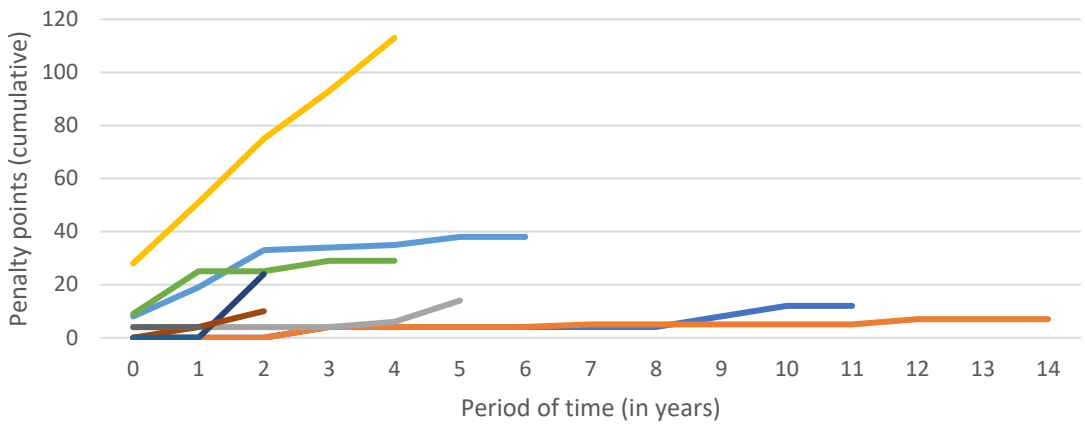

Figure 4.3 Penalty points per project on a timeline

In paragraph Appendix D of the Appendices, the expected graph of penalty points of a project in exploitation is described and illustrated. This expected graph is entirely based on the hypothesis that the imposed penalty points depend on the management of the maintenance of the life-cycle of an infrastructure project. For instance, there would be an increase in imposed penalty points just before the major maintenance. However, most Contract Managers of Rijkswaterstaat have mentioned that the majority of the imposed penalty points are due to safety or process aspects. According to them, the shortcomings are rarely caused by shortcomings in terms of the asset itself. Therefore, they assume that less penalty points in the category of maintenance are imposed. Appendix E shows that the penalty points are evenly divided among the categories. This can be explained by the fact that one shortcoming on a particular project mainly determines this distribution. Due to the confidentiality of the research, this cannot be discussed further.

4.3 Sharing information

The types of mechanisms for information sharing that were mentioned during the informal conversations and the interviews are formulated in, and in Appendix F. During the informal conversations and interviews eleven different meetings or consultations between Rijkswaterstaat and the contractor were identified. These different meetings and consultations are defined in Table 12.2 in Appendix F. There are five different systems or mechanisms that help the Contract Managers to exchange information with the contractor: telephone, e-mail, PMS, Relatics and Maintenance Management System. These systems are described in Table 12.3 in Appendix F. The systems may be obvious. Nevertheless, it is important to mention these. The service is tested by means of several forms of auditing. The four audits are described in Table 12.4 in Appendix F. The audits test the reliability of the PMS and process related requirements. In this table the road inspector is mentioned. The road inspector checks whether the safety requirements of the Dutch roadway network are met.

4.4 Contract Managers' perspectives

The Contract Managers have been asked about the use of penalty points and the context of penalty points by means of informal conversations. In addition to the formal data on the penalty points, the Contract Managers were approached and asked about their view on imposing penalty points and the goal that lies beneath.

4.4.1 Nature of the DBFM contract

Throughout the years the details of the DBFM contract form have changed. The first contracts knew fairly abstract requirements that could be interpreted in many different ways. Over the years, the requirements have been laid down more specifically in writing.

A terminology that is often used to describe the philosophy of DBFM is 'customisation' (in Dutch: maatwerk). None of the DBFM construction projects are the same and the Contract Managers advocate that the projects should not be treated that way either. One of the Contract Managers stated the DBFM contract is 90% fixed and 10% flexible. The Contract Managers do not aim to implement the contract as it is written in detail. Two different interpretations of the contract are distinguished: 'de letter van het contract' and 'de geest van het contract'. The contract is a guideline and a means to solve a contentious issue. Most Contract Managers aim to handle the projects without the contract and would only mention the contract if there is no way without.

During the contract duration it is likely a situation occurs in which a requirement in the contract is contrary to what makes sense. It is generally accepted that a contract has certain deficiencies that will come up along the way. It seems like this occurs more often with the requirements for the penalty points than other aspects of the contract. This may be the case because these requirements are more difficult to define. The Contract Managers seem to use the penalty points in a way of judging on reasonableness and not on the written details. They attempt to look beyond the deviation that is identified as a shortcoming. And ask themselves whether the shortcoming is worth a penalty point.

The majority of the Contract Managers pointed out that imposing penalty points is not a purpose, but a means. Rijkswaterstaat is not aiming to make profit using the penalty points. The penalty points are an incentive to steer the contractor. In most cases, the Contract Managers had the idea that in terms of the penalty points the contractor is fearful of the financer and not of Rijkswaterstaat. The contractor prevents the penalty points to meet the expectations of and to please the financers. Several Contract Managers have expressed suspicions that the financial interest of the contractor and the pressure they experience from above from the SPC and the banks is of great importance in the standard conformity of the contractor's behaviour. It is said that the motivation that results from this is difficult to obtain in another way.

In the beginning of this section it was stated that the process of imposing penalty points allows the Contract Managers to create a win-win situation. The majority of the Contract Managers indicated during the conversations to be open for negotiation and settling on a situation that is not merely beneficial for one of the parties. The length of the contract is very important in this case. There is no need for a win-win situation after every negotiation due to the long-term contract. As long as both parties can be satisfied at the end of the ride. For instance, Contract Managers can bring up a 'loss' or a moment when they have met the private party by putting their own interests in second place. By bringing this up it allows to take the ongoing issue of the table and settling on a solution that works for both parties. However, this is merely possible when the Contract Manager has built up memory of the process of the project. The Contract Manager must know the history of the project and the contractor.

4.4.2 Interaction of the network of enforcement

Various Contract Managers mention the attitude of the contractor with regard to its financial gain. Was the awarding of the contract a good deal for the contractor or not? They are under the impression that this is leading for the relationship during the contract period. It is assumed that contractors on projects with small margins are under more pressure and that this results in less pleasant relationships between client and contractor.

One saying that almost invariably came back was that DBFM is 'human work' (in Dutch: mensenwerk). The collaboration is more about relationship and cooperation and less about the system and the rules of the game. The contract allows the involved parties to come together and create a win-win situation in which they both give and take. One of the Contract Managers added a critical note to this saying. The Contract Manager emphasized that there is a difference between collaboration and working together (in Dutch: samenwerking is niet samen werken). The fact that there is a pleasant cooperation does not mean that the parties work together. At the end of the day the contractor makes the decisions. The client and the contractor do not act together.

The Contract Managers are coping with differing signals from the political echelon. On the one hand, there are the reports that question why penalty points are not imposed and advocate uniformity and standardisation. This implies to act in accordance with the contract. On the other hand, the 'Market Vision' implies otherwise and stimulates a cooperative relationship between public and private parties.

4.4.3 Role of Contract Manager

Contract Managers were the most divergent in terms of trust. Several Contract Managers suspect the contractor of not being completely transparent and withholding information by making smart use of the PMS and the procedures. Some of the Contract Managers believe that a whole lot is happening behind closed doors that they do not know about. They call for more transparency.

However, frequently information about the project and a contractor disappears. Two causes that are identified in the literature have been recognized in practice as well. The first as a result of changes in staff of the IPM teams of Rijkswaterstaat. The Contract Manager of the A12 VEG mentioned that there had been many different Contract Managers in a short period of time before his team took over the project. When taking over the team, the relationship between the public and the private parties had not been pleasant. This is not caused by the frequent change of staff, however, it certainly did not benefit the relationship. On top of that, with the departure of each Contract Manager, much relevant information gets lost. In particular the informal, *nice to know*-information (De Bruijn & Ten Heuvelhof, 2005, p. 63).

The general opinion among the Contract Managers is that the motivation and the intentions of the contractor are of great importance. The contractor is expected to give the impression that they have done everything in their power to prevent a discount. The view of Contract Managers on whether the contractor is acting proactively is crucial. Most Contract Managers would gladly give a contractor another chance after they have promised to do better next time.

In chapter 3 the discretion of the Contract Managers of Rijkswaterstaat was introduced. The definition of discretion indicates a certain autonomy of the Contract Managers on choosing what to do and what is suitable in a particular situation (Combley, 2011, p. 241). During the conversations with Contract Managers, they repeatedly emphasized they may impose penalty points on the contractor. The contractor has the right of receiving a or more penalty points. The Contract Managers together with their Advisors have the autonomy on deciding to impose penalty points when they can argue that this is a worthy situation and not to impose when they can argue that is it not. Only the Contract Managers (and Advisors) and the contractor are involved in the negotiations if there is no need for escalation.

The way the Contract Manager's discretion is used depends on the Contract Manager, the project and the situation. There are several known cases where penalty points could have been imposed, but the managers did not see the need for it. For example, the contractor had already suffered enough losses, either financially or emotionally. There was a shortcoming despite the contractor's motivation. At that point, imposing penalty points could seriously deteriorate the relationship.

4.5 Intermediate conclusion

The scope of the research is equal to the overlap between the three different aspects shown in Figure 4.4. This chapter contains the explanation of the three different aspects besides the brief presentation of the DBFM projects in the explanation phase.

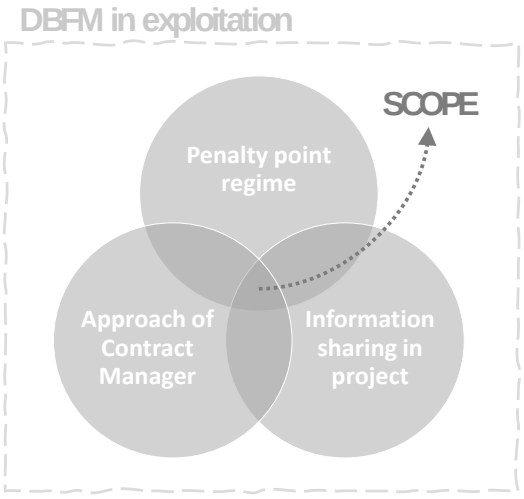

Figure 4.4 Scope of the research

The process of imposing penalty points starts with the observation that a performance requirement is not met. This can be observed by an individual or by a computer system. In the case of a deviation that is worth a penalty points, this is a shortcoming on the part of the contractor. The shortcoming is then registered in a system. Ultimately, a decision will be made on any penalty points. There are three different outcomes: penalty points are imposed, penalty points are placed on hold and the contractor formulates a control measure or no penalty points are imposed. If the control measure is not met, penalty points can still be imposed. There are various ways of sharing information regarding penalty points.

The negotiation on the penalty points takes place between the Contract Managers of Rijkswaterstaat and the contractor. The Contract Manager of the contractor is in control of the information. The Contract Manager of Rijkswaterstaat is in control of the decision on the financial consequences for the contractor. The Contract Manager of Rijkswaterstaat is in need of the information to make the decision. The Contract Manager of the contractor wants the payment and the Contract Manager of Rijkswaterstaat wants a sufficient service.

The Contract Managers are of the opinion that in contract management there should be room for flexibility. They act according to the principles of reasonableness and fairness. The 'letter of the contract' is not always in line with these principles which makes their degree of discretion of great importance according to the Contract Managers.

The focus of this research is the interaction between the Contract Managers of Rijkswaterstaat and the contractor. Hence, for this research the spatial dimension is restricted to information sharing between these parties. In addition to the dimensions of Bao and Bouthillier (2013), it is studied how information is shared between the parties. Are they using specific systems? Either written or verbal? Are there structural consultations or meetings? These types of mechanisms clarify the working methods and the procedures of information sharing. Furthermore, the interaction between the Contract Managers is characterized in terms of the way of cooperation. Does the interaction take place in a formal or more informal manner?

Indicators of the levels of information sharing:

5. Content dimension
    a. Number of types of information being shared
    b. Level of detail
6. Spatial dimension
    a. Distance of information sharing
    b. Width of information sharing
7. Time dimension
    a. Timeliness of sharing
    b. Frequency of sharing
8. *System dimension*
    a. Types of mechanisms for information sharing
    b. Characteristics of interaction

Part III Empirical research

5

Within case findings

The findings of the interviews that were taken with different Contract Managers of Rijkswaterstaat and the contractors of the cases that were selected is presented in this chapter. The findings are structured in terms of characteristics, organisation, client-contractor relationship, sharing information and penalty points. These findings are presented in paragraph 5.1. This will be concluded in paragraph 5.2.

5.1 General

Four different DBFM projects were selected as the case studies. For confidentiality reasons the projects are referred to as case A, B, C and D. The Contract Managers of Rijkswaterstaat were interviewed for all cases. Case C and D are managed by one Contract Manager of Rijkswaterstaat. The Contract Managers of the contractors of case C and D are interviewed as well. A case study is done to apprehend the approach of the Contract Manager of Rijkswaterstaat in making the decision on penalty points. This is achieved by doing four case studies: case A, B, C and D. The Contract Managers of Rijkswaterstaat were interviewed for all of the cases and the Contract Managers of the contractor were interviewed for case C and D. The interviewees have been asked about their views on DBFM and the cooperation between client and contractor in that setting and regarding penalty points.

The cases have been selected based on some key differences of the projects. The scope of the project and the period of time that the project is in the exploitation phase. The cases are researched by looking into the available formal data on the projects and by conducting semi-structured interviews. The results of the combined data are presented in this paragraph.

First, the characteristics of the projects and the Contract Managers are explained. The differences and similarities of the cases are stated in section 5.1.1. Further, the organisational structures are described in 5.1.2 by stating the members of the projects teams that are involved in the projects. Section 5.1.3 illustrates the differences and similarities of the collaboration between Rijkswaterstaat and the contractor in the cases. The way information between the two parties is shared in terms of mechanisms is described in section 5.1.4. Lastly, section 5.1.5 clarifies the differences and similarities in imposing penalty points and how this relates to the sharing of information.

An extensive presentation of the separate cases can be found in Appendix G.

5.1.1 Characteristics of cases

The Contract Managers that have been interviewed all have significant work experience. The Contract Managers of the contractor both have significantly more experience in DBFM projects in both the realisation as the exploitation phase than the Contract Managers of Rijkswaterstaat have. Figure 5.1 shows a radar chart involving the four cases that have been studied related to four characteristics of the projects. This radar graph is intended to give the reader a sense of the differences and similarities of the cases in general. The graph is not an exact representation of reality or of the quantitative values that are known to the public. The first characteristic is the contract value. Cases A and B have a very high contract value looking at the totality of DBFM projects whilst cases C and D have a lower contract value. The second characteristic

that is used to illustrate the cases is the scope of the projects. For example, in terms of the size of the area or the multidisciplinarity of a project. Cases A and B can be identified as projects with a large scope. Case C and D both have a smaller scope than case A and B. This is partly related to the contract value. The complexity of the scope of cases C and D is focused on the technical aspects. The scope of case C is somewhat larger than case D.

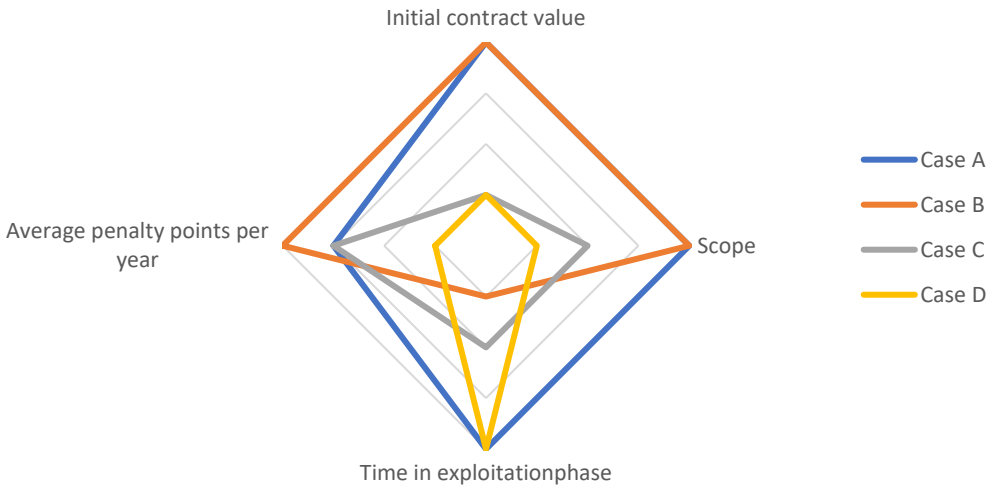

Figure 5.1 Radar chart of all cases

The third characteristic that is used is the time that the projects have been in the exploitation phase. The projects of cases C and D have been in the exploitation phase for a very long time The project of case B has been in the exploitation phase for the shortest time and the project of case C somewhat longer than case B. The last characteristic that is used to broadly describe the projects is the average amount of penalty points that have been imposed per year. Case B stands out in imposing penalty points whereas case D has had few penalty points in the exploitation phase. Case D has not had any financial consequences due to penalty points in the exploitation phase. The contract differs from the other cases is this was a learning path (in Dutch: leertraject) for Rijkswaterstaat. The amount of penalty points per year for case A and C is above average compared to the total of DBFM projects. However, the amount is less than in case B.

5.1.2 Organisation

The organisations of the Rijkswaterstaat project teams of case A and B are very similar. In both cases the Contract Manager is part of an IPM-team and they lead the Contract Management teams of the projects. The contract team of case A has a Contract Advisor, a Technical Advisor and a Buyer. The exact organisation of the contractor is unknown.

Cases C and D are managed by the same IPM team. The Stakeholder Manager of the IPM-team is involved in case C and the Environmental Advisor in case D. The Contract Manager of cases C and D is not part of this IPM-team. Case C and D have different Technical Advisors. The Contract Manager of the contractor is responsible for the contract that the SPC has entered into with Rijkswaterstaat. The Contract Manager reports to Rijkswaterstaat if it appears something does not comply with the contract. The organisation of the contractor of case D is fairly small and consists of the Project Manager, the Contract Manager and the assistant.

5.1.3 Relationship

The research aimed to get a feeling of the relationship between Rijkswaterstaat and the contractor. An attempt is made to visualize this by the degree of mutual trust, the formality of the contact et cetera. The four cases are positioned on the axis from formal to informal that is illustrated in Figure 5.2.

The Contract Manager of Rijkswaterstaat of case A indicates the relationship between the two parties is good. In the cooperation between both parties, they often revert back to the contract. This indicates that the relationship is relatively formal. Despite this habit, the Contract Manager characterised the collaboration to be between formal and informal. In comparison to the other cases, the collaboration is relatively formal. However, the Contract Manager is striving for a more informal approach.

The Contract Manager of Rijkswaterstaat of case B characterises the relationship between the two parties to be good despite of the recent unpleasant debate on penalty points. According to the Contract Manager, the contractor is communicating more transparent and openly after the debate was finished. The collaboration is less formal than in case A.

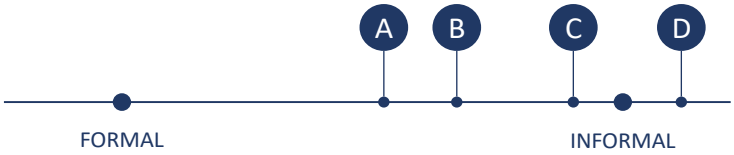

Figure 5.2 Formal-informal axis

The Contract Managers of case C and D from Rijkswaterstaat and the contractor define the relationship between the parties to be very good. The collaboration of case C is relatively informal in comparison to case A and B. Both parties try to inform each other as well and as quickly as possible. The collaboration in case D between the Contract Managers of Rijkswaterstaat and the contractor is very informal. Generally, they will call each other about every somewhat relevant aspect as soon as possible. The Contract Manager of Rijkswaterstaat regularly visits the office of case D for a cup of coffee.

Each of the Contract Managers has mentioned that the requirements in the contract are important to both parties. However, the safety and the availability of the road are paramount. The cooperation and the details in the contract should never get in the way of those motives.

5.1.4 Sharing information

Information can be shared in many different forms. First, the sharing of information through physical gathering is explained. Table 12.5 illustrates which of the mechanisms are used in which case. During the interviews eleven different meetings or consultations between Rijkswaterstaat and the contractor were identified. The use of meetings or consultations differs greatly per case. The use of meetings of consultations of the different cases is illustrated in Figure 5.3. This figure is not an exact representation of the amount of meetings that are held between both parties. However, this is intended to give the reader a sense of the differences and similarities of the cases that are studied.

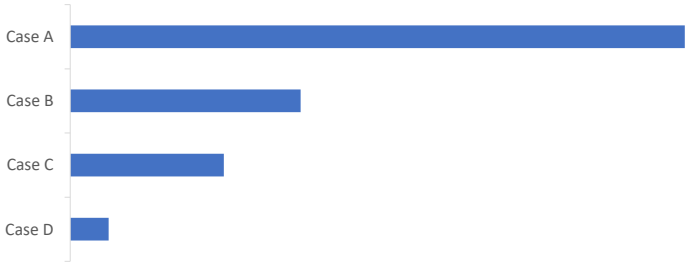

Figure 5.3 Meetings per year

The involved teams of Rijkswaterstaat and the contractor of case D only have one meeting every two months. Case C had three meetings that all occurred once a month. However, recently they have merged two of the meetings to one which brings the total of meetings to two meetings that both occur once a month. One of the meetings is formal and the other is informal.

The Contract Manager of case A mentioned three different meetings. One formal meeting that takes place once every six weeks and one informal meeting that takes place once every two weeks. In addition to that they organise a project follow-up once every year.

Case B has by far the most meetings compared to the other cases. The parties have a formal and an informal meeting like case A. However, on top of those meetings they have six other meetings where they discuss specific topics such as penalty points, PMS and damage.

In terms of systems, case A and B both work with a PMS. Case C has a Maintenance Management System and the Relatics program. The contractor of case D is not obligated to provide a system with realtime information of the project to Rijkswaterstaat. The contractor is not obligated to notify Rijkswaterstaat on every occurrence. They inform each other when they deem it necessary or think that the other deems it necessary. This is mostly done by telephone or in person soon after they themselves are aware. Similar to this way of early warning the client, the Contract Manager of the contractor of case C notifies the Contract Manager of Rijkswaterstaat by e-mail when a shortcoming is observed. Case A and B usually discuss shortcomings or penalty points during meetings. However, they have both indicated that they want to have the conversation with the contractor earlier on. They would prefer to be involved in an earlier phase of the observation.

5.1.5 Penalty points

The abstract way of imposing penalty points is explained in paragraph 4.2. However, the procedures of imposing penalty points are very different in detail per project. In case A, this is mostly done in the contract consultation. The Contract Manager of Rijkswaterstaat has mentioned that they are aiming to have a more informal approach towards the penalty points. The formal letter regarding the shortcoming would then be used only for formal registration instead of communication between both parties.

In case B, there are three meetings in which a shortcoming or potential penalty points can be discussed: the contract, the penalty point and the shortcoming consultation.

The Contract Managers of Rijkswaterstaat and the contractor of case C only inform each other in terms of shortcoming or penalty points via e-mail. This is more informal than in case A and B. The Contract Managers of Rijkswaterstaat and the contractor of case D discuss shortcomings and penalty points in person or during a meeting if necessary. The contact between the parties is very informal.

In every case Rijkswaterstaat is strict in terms of safety. This was stated by the Contract Managers of Rijkswaterstaat as well as of the contractors. In addition to that, this is in line with the ‘Stramien Boetepunten’.

The Contract Managers of cases A and B have mentioned cases wherein the contractor escalated to the management. In those circumstances the Contract Manager of the contractor would have alarmed their management of potential penalty points. The management of the contractor would then get in contact with the higher management of Rijkswaterstaat. This is not beneficial for the relationship between both parties. Cases C and D have not mentioned any situations like this.

5.2 Intermediate conclusion

A case study is done to apprehend the approach of the Contract Manager of Rijkswaterstaat in making the decision on penalty points. This is achieved by doing four case studies: case A, B, C and D. The system and procedure of imposing penalty points differs per project. The cases differ significantly in terms of contract value, scope, time in the exploitation phase and the amount of penalty points that have been imposed. The relationship between the client and the contractor for cases A and B are perceived to be more formal than for cases C and D. In terms of sharing information, the parties of case A and B wish to be informed on matters more frequently and earlier on. The Contract Managers of case C and D is informed as soon as possible by the Contract Managers of the contractors. The findings suggest that there is an interdependency between a high contract value, large scope, a formal way of communicating, a desire for more information and, the frequency and timeliness of sharing information. And vice versa.

6

Within case analysis

This chapter presents the analysis that is done on the case findings. First, the analysis on the observations that have been done by means of a case study are shown in paragraph 6.1. Next, the case findings are related to the theoretical framework in paragraph 6.2. Lastly, the chapter is concluded in paragraph 6.3.

6.1 Empirical case interpretation

In chapter 5 the findings of the case study of the four cases were presented. It states that case A has a project with a large contract value and scope. The project has been in de exploitation phase for a long time. The organisation around the project is more extensive than case C and D, but less extensive than case B. The collaboration between the client and the contractor is perceived to be between formal and informal. The Contract Managers would like the contractor to enter into a conversation about issues in an earlier stage. They want to be involved earlier and receive more information.

Like case A, case B has a large contract value and scope. The project has been in the exploitation phase for a short period of time. The organisation around the project is relatively extensive. Like case A, the collaboration is perceived between formal and informal. The client and the contractor have significantly more meetings than all other cases. The Contract Manager of case B has a bad experience with the contractor who has involved Rijkswaterstaat at a later stage after observing a shortcoming. They too want to be involved earlier. However, this incident can give a misleading picture of the state of affairs.

Case C and D both have a fairly small contract value and scope compared to cases A and B. Case D has been in the exploitation phase for a very long time and case C for a relatively short time. The collaboration between client and contractor is in both cases more informal than case A and B. Case D can be characterised as very informal. The Contract Manager of case C and D is satisfied with the way information is shared and the amount of information that is shared.

In general, projects with a larger scope and/or an unpleasant history tend to return to the contract. At the time it seems more pleasant for the parties to go back to the *rules of the game* and to behave in a formal manner. The Contract Manager of the contractor of case C has mentioned that an unpleasant corporation hardens the collaboration. In those situations, the individuals involved stick to the contract.

The organisations that are formed by the individuals of Rijkswaterstaat that are involved in the contract management of the projects differ between A and B, and the organisation that operates case C and D. This can be explained by the difference in the scope. A larger scope leads to more responsibilities. The Contract Managers of case A and B are, therefore, further from the profession than the Contract Manager of case C and D.

The way Contract Managers handle the penalty points and solve the issues involving penalty points specifically are very differing. The Contract Manager of case A seemed to be more strict and the Contract Manager of case C and D seemed to be least strict. All Contract Managers explained that the extent to which contractors show proactive behaviour is of great importance to them. A contractor is perceived to be more

proactive when the Contract Managers consider the contractor to be transparent and to have informed Rijkswaterstaat in time. The contractor is considered not to be proactive if the contractor shares incorrect information or the information is not shared in accordance with the desired timeliness. Case A and B have known one or more cases in which the Contract Manager perceived the contractor not to act proactively which eventually led to penalty points and thus financial consequences for the contractor.

6.2 Case interpretation though a theoretical framework

In order to answer the main research question, the knowledge that has been gained in practice needs to be examined by the literature. This is done by means of an axis. The axis visualizes a two-dimensional continuum on which the Agency and Stewardship theory are located.

In chapter 5 it was stated that the projects are referred to as case A, B, C and D for confidentiality reasons. The Contract Managers of Rijkswaterstaat were interviewed for all cases. Case C and D are managed by one Contract Manager of Rijkswaterstaat. The Contract Managers of the contractors of case C and D are interviewed as well.

In Figure 6.1, the axis of *model of man* is illustrated. A case located near Agency illustrates a higher presence of self-serving aspects with the Contract Manager. Are the goals aligned? Does the Contract Manager focus on the goals of Rijkswaterstaat or does the Contract Manager comprehend that the contractor has different goals? Does the Contract Manager behave in an opportunistic manner? Cases located near Stewardship refer to a higher presence of collective-serving aspects of the Contract Manager. Is the Contract Manager aware of the goals of the contractor even though the goals are not aligned?

Contract Manager A is located in between the Agency and Stewardship. The goals between Rijkswaterstaat and the contractor in case A are not perfectly aligned. However, the Contract Manager is aware of the differing goals and empathises with the contractor. Like Contract Manager A, Contract Manager B empathises with the contractor as well. Both Contract Managers understand that a contractor cannot survive without making a profit. Contract Manager B states that after a recent issue the goals of Rijkswaterstaat are more aligned and they both strive to reduce the greatest risks. Therefore, case B is located more towards Stewardship. The Contract Managers of cases C and D aims to gain an understanding of the expectations of the contractor by means of starting the conversation. Furthermore, the Contract Manager aims to uncover the motivations of the contractor. The Contract Manager attempts to achieve a setting in which everything is uncovered and from that point on to find a solution that serves both parties. Because of this the cases C and D are near Stewardship. Case D is located past Stewardship due to the fact that the contractor's goals are almost perfectly aligned with Rijkswaterstaat. The Contract Manager of the contractor feels extremely responsible for the project.

Figure 6.1 Agency-Stewardship axis of dimension 'model of man'

In Figure 6.2, the axis is illustrated that visualizes the relative positions of the case in terms of the dimension *motivation*. The characteristics of the Contract Managers relate to the principal. The principal does not get any advantages in terms of sanctions or bonuses. For example, if a principal were to gain financial advantages on top of a normal salary this could possibly be corruption. The dimension of motivation does more relate to the Contract Manager of the contractor. All of the Contract Managers are, therefore, positioned at Stewardship.

Figure 6.2 Agency-Stewardship axis of dimension 'motivation'

Figure 6.3 shows the axis of the dimension *trust*. The Contract Manager of case A has shown low levels of trust and is, therefore, positioned near Agency. The contract sets many requirements towards the contractor of updating realtime data to be accessible for Rijkswaterstaat every moment. The Contract Manager is aware the goals of both parties are not aligned. The Contract Manager of case B has stated that due to recent event their trust was violated. However, the issues have been resolved and they are rebuilding the relationship. According to the Contract Manager the contractor is very open and transparent since the issue. The Contract Manager of case B is placed between Agency and Stewardship. The Contract Manager of cases C and D has stated that there is total openness and transparency from both parties. Because of this, cases C and D are positioned at Stewardship.

Figure 6.3 Agency-Stewardship axis of dimension 'trust'

Figure 6.4 illustrates the Agency-Stewardship axis of the dimension *approach*. In case A there is a strong urge to monitor the contractor. This would position A at Agency. However, the Contract Manager of Rijkswaterstaat still encourages the contractor to come up with control measures to prevent penalty points. Most of the penalty points are on the process requirements. Process requirements are generally aimed at monitoring and controlling the project. Which means that if there are penalty points, the penalty points are imposed because it is perceived that there is a lack of monitoring and control. The communication is relatively formal. Even though the Contract Manager of case A aims to transform this more to informal. Due to this, the Contract Manager of case A is positioned near Agency. For the most part the same holds for the Contract Manager of case B. Both contracts incorporate a lot of process requirements. Case B has a lot of meetings with the contractor. These are both formal and informal. As previously states there had been an issue recently. The team is now stimulating the contractor to involve Rijkswaterstaat earlier if there are problems.

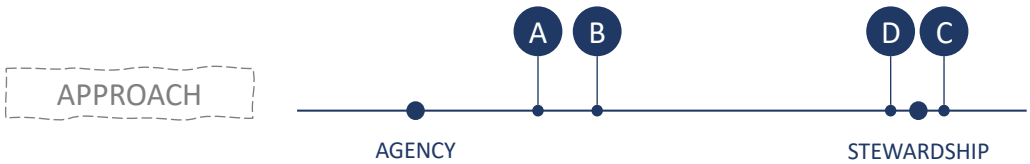

Figure 6.4 Agency-Stewardship axis of dimension 'approach'

The approach of the Contract Manager of cases C and D is in both cases very informal compared to case A and B. There are barely any process requirements in the contract of case D. In both cases, there is hardly any focus on monitoring and controlling. The Contract Manager trusts the contractor to inform Rijkswaterstaat when needed. Is there is an issue the Contract Manager first considers the reasonableness of the issue. In the end, the Contract Manager of case C and D steers the contractors on awareness instead of imposing penalty points. This corresponds to empowering structures. Therefore, the cases C and D are both near Stewardship. However, due to the structural use of control measures, C is beyond Stewardship.

6.3 Intermediate conclusion

The analysis of the collected data is presented in this chapter. Projects with a larger scope, generally, have more responsibilities and tasks that have to be divided among more individuals. The Contract Managers are automatically further away from the profession and call for more frequent and early sharing of information. The Contract Manager of case C and D is very satisfied by the frequency and the timeliness of the shared information. The contractors of case C and D are trusted by the Contract Manager, who is of the opinion that an investment in a good control measure is more valuable for Rijkswaterstaat than imposing penalty points. The Contract Managers of case A and B are familiar with issues in which the Contract Manager perceived the contractor not to act proactively. The contractor may not have shared the correct information or in line with the timeliness that is desired. It was stated that this has led to penalty points and thus financial consequences for the contractor.

Going back to the dimensions of the Agency and Stewardship theory:

MODEL OF MAN Contract Manager A is located in between the Agency and Stewardship. The goals between Rijkswaterstaat and the contractor in case A are not perfectly aligned. However, the Contract Manager is aware of the differing goals and empathises with the contractor. Contract Manager B empathises with the contractor as well. Contract Manager B states that after a recent issue the goals of Rijkswaterstaat are more aligned and they both strive to reduce the greatest risks. Therefore, case B is located more near Stewardship. The Contract Manager of cases C and D aims to uncover the motivations of the contractor. The Contract Manager attempts to achieve a setting in which everything is uncovered and from that point on to find a solution that serves both parties. Because of this the cases C and D are near Stewardship. Case D is located past Stewardship due to the fact that the contractor's goals are almost perfectly aligned with Rijkswaterstaat.

MOTIVATION All of the Contract Managers are positioned at Stewardship. The characteristics of the Contract Managers relate to the principal. The principal does not get any advantages in terms of sanctions or bonuses. The dimension of motivation does more relate to the Contract Manager of the contractor.

TRUST The Contract Manager of case A has shown relatively low levels of trust and is, therefore, positioned near Agency. The Contract Manager is aware the goals of both parties are not aligned and requests realtime data from the contractor. The Contract Manager of case B has stated that due to a recent event their trust was violated. The Contract Manager of case B is placed between Agency and Stewardship. The Contract Manager of cases C and D has stated that there is total openness and transparency from both parties. Because of this, cases C and D are positioned at Stewardship.

APPROACH The Contract Manager of case A of Rijkswaterstaat still encourages the contractor to come up with control measures to prevent penalty points. In case A there is a strong urge to monitor the contractor and this positions case A near Agency. For the most part the same holds for the Contract Manager of case B. The cases C and D are both near Stewardship. However, due to the structural use of control measures, C is beyond Stewardship.

Part IV Synthesize

7

Validation

In order to validate the findings of the research, a project manager of Rijkswaterstaat has been interviewed. The Project Manager that was interviewed has experience in different DBFM projects in the role of a Contract Manager. The interview was done by means of a set of statements. This method was used to provoke a response of the interviewee. There were three different sets of statements. The statements are related to DBFM, information sharing and penalty points. The statements will be discussed one by one in this paragraph.

Statements related to DBFM

The spirit of the contract is more important than the letter.

The Project Manager clearly agrees with the statement and is of the opinion that 'contract management is not sacred'. However, without a contract there is no cooperation. The Project Manager explains that it might turn out that the elaboration of the contract is not what was intended, both parties should start the conversation. The Project Manager states that the Anglo-Saxon character of the DBFM contract does not match the Dutch culture of interacting. According to the Project Managers, in an Anglo-Saxon culture the contract could state: 'You are going to do that and when you are done with that, you shoot yourself in the foot.' Then it is indeed the intention that the man shoots himself in the foot, literally. And that does not fit into the Dutch infrastructure management culture. The Dutch infrastructure management culture aims to act according to the principles of reasonableness and fairness.

The Market Vision is more important than the contract.

The Project Manager is of the opinion that the Market Vision and the DBFM contract are not in line with each other. "The Market Vision is based on our reasonableness and fairness and the contract is an Anglo-Saxon contract." The idea of the Market Vision is to achieve a realistic and acceptable risk distribution and in the DBFM contract the risk is allocated with the private party. The DBFM contract in which the private parties have suffered gigantic losses goes against the principle of the market vision.

A thick or a thin contract?

According to the Project Manager the volume of the contract depends on the scope of the project. The DBFM contract is in its essence less extensive than the traditional contracts. However, the Project Manager argues that the amount of process requirements can be questioned. "Focus more on the result instead of how the contractor gets to the result."

Continuity or 'changing of the guard'?

The Project Manager is of the opinion that it may be beneficial to appoint someone else as Contract Manager from time to time. "The managers that are good at realising projects are different types of managers than the managers that are good at maintaining." However, frequent change is not desirable as was already described in chapter 4.

Statements related to information sharing

The larger the project, the more formal the cooperation.

According to the Project Manager this is not necessarily the case. The larger the scope of the project the more difficult it becomes to manage a project. This makes the projects more complicated. However, the character of the cooperation between the client and the contractor does not depend on the scope of the project according to the Project Manager. “Collaboration is something between people.” However, a larger scope brings more responsibilities. The more responsibilities, the more the organisation ends up using systems and procedures.

The more transparent the contractor the better.

The Project Manager argues both contractor and client should be transparent in terms of expectations and goals. The Project Manager has experience with cooperation between client and contractor wherein both parties conceal their true expectations and goals. This can damage the cooperation. “That transparency is often lacking on both sides. We always make up a story around it that makes it seem like it's the other person's fault.”

The Project Manager has experience with projects wherein the contractor is required to self-monitor using systems. Except for the systems that are linked to the availability discount, for some systems the registration is done manually. It is described that it is unknown to the client whether the contractor is entirely honest in registering. According to the Project Manager this is particularly relevant for this research on penalty points. The procedure expects the contractor to register a shortcoming when observed by the contractor. If there is a shortcoming, there is a chance the contractor might get one or more penalty points. The Project Manager argues that it is brave of a contractor to openly register the shortcoming and risk penalty points. The following example was given:

“I think it is very brave of a contractor who says: 'I went outside and I saw that five lamps did not work. I will register that knowing that it might lead to a discount.’ The contractor could also say: ‘I saw they aren’t working. I’ll take a look again tomorrow. I will replace the light by then and after that I will register that one of the lights did not work and that I’ve replaced it.’ In both of the cases the lights are back on in two days.”

The Project Manager explains that a Contract Manager must carefully consider whether or not to give a discount. The contractor should sense that you, as a Contract Manager, have confidence in them. In addition, according to the Project Manager, the Contract Manager has to make clear to the contractor that transparency and the control measures are more important to the client than imposing penalty points and giving the contractor sanctions. This does not align with ‘optimal compliance with the contract’ that the political echelon desires which emphasizes the difference between values of the echelons (Tweede Kamer der Staten-Generaal, 2017, p. 4).

Statements related to penalty points

A proactive contractor has less chance of penalty points.

The Project Manager agrees with this statement. According to the Project Manager, penalty points are only intended for situations of serious dissatisfaction where penalty points can act as a stick. Figuratively speaking.

Penalty points are a means/stimulus, not an end.

According to the Project Manager, penalty points are a means to steer. When a penalty point is imposed, the contractor gets paid less than what they hoped for. This amount is relatively much money for a project. The budget of projects in the exploitation phase is much smaller than in the realization phase. The Project Manager states that penalty points are a steering tool to be used with caution.

Every Contract Manager would rather see a proactive contractor than Rijkswaterstaat collecting a lot of money from penalty points. The Project Manager is of the opinion that it would be more beneficial if the contractor invests in improvements than pays for the penalty points. The Project Manager conforms that imposing penalty points can be a subjective procedure. The pressure that the contractor gets from the lenders and the banks is perceived as positive by the Project Manager. It is difficult to get this focus in a different way.

The Project Manager is convinced that the number of penalty points will be very limited if the cooperation between client and contractor is good. This obviously works both ways. If the cooperation between the parties is good, chances are that the contractor is proactive and a proactive contract has less chance of receiving penalty points.

Penalty points are good instruments to create a win-win situation.

The Project Manager reckons this statement and explains that using penalty points to create a win-win situation might not be entirely legitimate. However, according to the Project Manager, there is a grey area in contract management. The penalty points are located in this grey area. In those grey areas it is of importance that the contractor spends money intended for penalty points on improvements instead of a punishment of Rijkswaterstaat.

There is little accountability.

The Project Manager disagrees with this statement. The penalty points are recorded and discussed within the IPM team. There is the opportunity to discuss penalty points during the PiP consultation if necessary. As a public organisation Rijkswaterstaat should be transparent according to the Project Manager. The project team should be able to account for the decisions they make. If this is not happening there is a risk that the Contract Managers will lose their degree of discretion.

Concluding remarks

As a result of the informal conversations and interviews for the case study, the research suggests that the Contract Managers of Rijkswaterstaat experience difficulties in determining to what extend they follow the contract. The validation interview confirmed this presumption. The project manager refers to the Anglo-Saxon based contract which has been previously stated in chapter 3 together with the Rhineland model. The Contract Managers prioritise the long-term cooperation over strictly following the contract. The long-term cooperation refers the relational dimension and strictly following the contract to the juridical dimension. The relational dimension is prioritised by the Contract Managers which refers to a preference for the Rhineland model.

The interdependency between the way of information sharing and the scope of the project was emphasised by the project managers during the validation interview. The project manager mentions that transparency is not by definition linked to sharing information. The importance of transparency in terms of sharing expectations is introduced by the project manager. Moreover, transparency in terms of honest information sharing and openly communicating on the effort to improve on aspects that have caused shortcomings by means of formulating a control measure is more important to Rijkswaterstaat than no improvements on shortcoming and giving the contractor sanctions by imposing penalty points. This is in line with the Contract Managers' perspective. It is assumed that a contractor that is transparent and initiates improvement will not be punished for this. By means of the validation interview it can be concluded that each client desires a proactive contractor. The penalty points are just the stick to punish the contractor when the contractor is behaving in an inappropriate manner and proactivity is rewarded by not imposing penalty points. Although this is beneficial for the private party, this is not in line with 'optimal compliance with the contract' that the political echelon calls for (Tweede Kamer der Staten-Generaal, 2017, p. 4). Moreover, it is difficult to measure whether a control measure is actually of more value than imposing penalty points. Which makes the penalty points regime, indeed, a grey area in contract management of DBFM contracts.

8

Discussion

The first paragraph (8.1) of this chapter interprets the results of the research. The limitations of the research are stated in paragraph 8.2. Lastly, the future research in paragraph 8.3.

8.1 Discussion

The results of the research discussed in the conclusion support the expectations obtained from the literature study. The results presumes that the Contract Manager who is closer to the profession has a greater chance of obtaining frequent, early and more *nice to know*-information and experiences higher levels of trust in the contractor. The further a Contract Manager moves from the profession, the more the focus will be on the result. The research gives an indication of two aspects that influence the aforementioned characteristics and the resulting approach of the Contract Managers. First, the scope of a project can influence this. A Contract Manager of a project with a larger scope is automatically further from the profession. The Contract Manager has an indirect line with the operation, which makes it difficult to exchange information early and frequently. A Contract Manager on a project with a smaller scope has fewer intermediate links that increase the line between Contract Manager and operation. This makes a frequent and early communication easier to achieve. Furthermore, the history of a project is important when choosing a specific approach as a Contract Manager. Contract Managers can include past events in their decision. Contract Managers can include past events in their decision. Each of the projects deals with unique events and circumstances that determine the perspective of those involved. Annoying or pleasant perceived events and circumstances can influence the decisions of Contract Managers which can result in either more positive or negative consequences for the contractor. The extent to which this is done and the interpretation can differ per Contract Manager. For instance, one Contract Manager might forgive and forget a certain negative occurrence sooner than the other and decide not to impose penalty points whereas another would have decided to impose penalty points. One Contract Manager might unconsciously use past negative or positive occurrences to justify a recent decision on imposing penalty points whereas another Contract Manager would have made more unprejudiced decision. If no objections are raised by the contractor or Rijkswaterstaat, this might lead to an approach that is either relatively strict on imposing penalty points or that focuses relatively much on the empowerment of the contractor. The Contract Manager's perspective, which is determined by the experience with a specific project, influences that Contract Manager's approach. This approach largely determines the decision on imposing penalty points. It is unknown whether this is acceptable for the political and managerial echelon.

Strictly according to the contract, any shortcoming that is worth a penalty point could result in a financial discount on the payment. In case of the DBFM contract, the private party is requested to financially harm themselves. The Rijkswaterstaat Contract Managers feel uncomfortable requesting this from a private party and are, therefore, not acting in a strict compliance with the contract. They refer to the fact that they MAY impose penalty points and use their degree of discretion. The Contract Managers of Rijkswaterstaat prioritise the relationship between client and contractor over the contract. They use their role as boundary

spanners to recognise the necessity of the contract with the associated penalty points regime, but additionally being able to put the results into perspective.

The research only involves the approach and perspective of the Contract Managers of Rijkswaterstaat. However, the decision on imposing penalty points is a result of a continuous interaction process in the total network of involved organisations and individuals.

The 'Stramien Boetepunten' is a tool and guideline that is initiated by the Contract Managers. The 'Stramien Boetepunten' takes into account the nature of the requirement (safety), the culpability of the penalty points and the proactivity of the contractor. It is an attempt to describe the *tacit approach* of the Contract Managers. By means of the 'Stramien Boetepunten' the Contract Managers attempt to guide their approach as a collective in advance of the decision on imposing penalty points. This is aimed to reduce the risk of losing their degree of discretion. This way the 'Stramien Boetepunten' contributes to the uniformity of the approach of the Contract Managers and to the concession of the values of the political and the managerial echelon. It is important to emphasise that this is only contributing to the uniformity of the approach of the Contract Managers. The 'Stramien Boetepunten' does not ensure a uniform approach of the Contract Managers and does not translate into a strict uniformity. The 'Stramien Boetepunten' does not provide a specified explanation or explanation in which situations a contractor is culpable for a shortcoming and what the conditions are for identifying a contractor as proactive. The Contract Managers are expected to interpret this themselves.

8.2 Limitations

The datasets that have been gathered from each individual Contract Manager are different to each other. This is due to the fact that the projects started in different times and are now all for a different period of time in the execution phase. Moreover, all Contract Managers collect the data individually in their self-created format. This makes it hard to relate the results to each other. Furthermore, only for four of the projects all of the requested data was available. As a result, it was not possible to analyse all projects regarding to the categories of the penalty points and in which situations shortcomings did or did not lead to imposing penalty points. Therefore, the quantitative data analysis has become less extensive than previously expected and, for example, no definitive statement can be made about in which category the most shortcomings occur.

Conducting research on the decisions made by the Contract Managers and their behaviour relating to the penalty points may suffice for this thesis. However, this may not give a complete overview of the process. Research on the entire interaction process of imposing penalty points is more than the act of the Contract Manager. The research shows that the actions and the attitude of the Contract Managers are completely dependent on the interaction with the contractor and the involved echelons.

The Agency and the Stewardship theories were chosen to substantiate the research. Both theories are based on the principal-agent problem. The research is primarily done on the Contract Manager. The Contract Manager is the principal in the principal-agent problem. The principal-agent problem in both the Agency and the Stewardship theory focuses on the role of the agent more than on the principal. Therefore, a theory that focuses more on the client in the relationship might have been more suitable.

In a case study, multiple cases are compared to one another. However, many Contract Managers have emphasized that no project is the same which makes it extremely difficult to compare them. Regarding the case selection, the goal was to select projects with different characteristics. For example projects with a large and a small scope or long-term and short-term projects. This was done to create a comprehensive picture of the DBFM projects. The known outliers of the DBFM projects in the exploitation phase, for instance A15 Maasvlakte-Vaanplein, are excluded from the case study to avoid misinterpretations of causal relationships. In the cases it was attempted to clarify the changes by giving the reader a perception of the contract value, the scope, the time in the exploitation phase and the average penalty points that were

imposed. The confidentiality of the research makes it difficult for the reader to imagine the differences. There is a chance that the reader will make incorrect assumptions.

The findings of the informal conversations and the interviews could be misleading. First of all, mostly the interesting cases were discussed during the conversations. The daily course of events are often left out or forgotten, because they might have been perceived as obvious. Further, the perspective of the private party has only been gathered for two of the four cases. In the remaining cases, the Contract Managers could have easily twisted the stories a little to make it more beneficial for them. Consciously or unconsciously. Obviously, this is not assumed, but it could have happened. Moreover, the opinion of the Contract Manager on the relationship with the contractor is primarily dependent on the recent events. What they pass on during the conversations relates to the perception they have had of the latest period of time or because of a specific case. This is not an average of the entire contract duration.

8.3 Future research

The research that has been conducted focuses on the approach and the perspective of the Contract Managers of Rijkswaterstaat in DBFM projects. The research does not include an extensive study on the objectives of the management. Neither does the research elaborate in detail on the objective of the political echelon. Further research might explore the approach and the perspective of the managerial and political echelon. The research aims to include the perspective of the contractor on the matter and presents some suggestions of their opinion by means of a small selection of Contract Managers of the contractor. Despite these first results, questions remain and further research on the approach and perspective of the contract would be useful. The research is based on DBFM projects in which Rijkswaterstaat is the client. However, there are other clients in the Netherlands that have tendered DBFM contracts as well. For example, Rijksvastgoedbedrijf and various Water Boards. It would be interesting to study what the differences are in the payment mechanisms of the contracts and in what way the results differ. What can those organisations learn from each other?

The research is specifically aimed towards the penalty points regime of the payment mechanism of the DBFM contract. Other aspects of the payment mechanism and the development of the DBFM contract as a whole would be interesting for further research. The payment mechanism consists of the Performance Discount and the Availability Discount. Further research on the payment mechanism could examine a possible link between the Performance Discount and the Availability Discount. Additionally, other facets of the DBFM contract have been raising questions as well. The model agreement of DBFM contract has changed over time. Some Contract Managers claim the earlier contracts are more abstract and some claim the earlier contracts have set more requirements. In what way do the earlier DBFM contracts differ from the later ones? There may also be differences in results. This could eventually determine whether some requirements are more essential and some are less. And whether the requirements are realistic and can actually be executed. Furthermore, multiple Contract Managers have expressed their concerns on the inevitability of introducing changes to this long term contract. They stress that the core principles and motives of the contract may be affected by the changes. There are concerns on the fairness of adjustments to the contract towards the contractors that did not get the project after the tender. Research might be conducted to clarify the impact of changes in the contract.

The dimensions of *trust* of the Agency and Stewardship theories seems to have an influence on the way Contract Managers impose penalty points. It would be beneficial to study this dimension in more detail.

9

Conclusion and recommendations

The first paragraph of this chapter gives the conclusion of the research that has been conducted. The research questions that have been formulated in chapter 2 are answered in this paragraph. Paragraph 9.2 states the recommendations that have been constructed after the research.

9.1 Conclusion

The objective of the research is to contribute to the understanding of the approach of Rijkswaterstaat Contract Managers concerning penalty points in the exploitation phase of DBFM projects by assessing the available data and the approach in practice. The theories on Agency and Stewardship were used to put the findings in a broader context. The reason for the research on penalty points in DBFM contracts was mainly the differing approaches of Contract Managers of Rijkswaterstaat. Differences in approach creates political pressure for uniformity and stricter application of the steering mechanisms of the contract.

To structure the main research question a couple of sub questions were formulated. In this paragraph the sub-questions and the main research question are answered. First of all, the sub-questions will be discussed and finally the main question.

1. What do the process of imposing penalty points in DBFM and the theories on Agency and Stewardship consist of?

The process of imposing penalty points starts with the observation that a performance requirement is not met. This can be observed by an individual or by a computer system. In the case of a deviation that is worth penalty points, this is a shortcoming on the part of the contractor. The shortcoming is then registered in a system. Ultimately, a decision will be made on whether to impose penalty points. There are three different outcomes: penalty points are imposed, penalty points are placed on hold and the contractor formulates a control measure or no penalty points are imposed. If the control measure is not met, penalty points can still be imposed.

The Agency and Stewardship theories are both based on the principal-agent problem. The Agency theory describes a collaboration characterised by individualism (self-serving), low levels of trust, difference in the goals of the actors, often extrinsically motivated agent and governance through monitoring and incentives. The Stewardship theory refers to the principal as shareholder and the agent as steward. The Stewardship theory describes a collaboration characterised by collectivism (collective-serving), high levels of trust, goal alignment between actors, a steward that is both intrinsically and extrinsically motivated and governs through empowering structures.

2. What influence do Rijkswaterstaat Contract Managers have on imposing penalty points?

This influence lies in the decision on imposing penalty points. The notification of the shortcoming can automatically result in penalty points and subsequently a discount on the payment. Both parties can object. The objecting party is usually the contractor. The decision depends primarily on the Contract Manager. The Contract Managers make this decision based on the ‘Stramien Boetepunten’. The ‘Stramien Boetepunten’

is a guideline and not a legislation. This guideline is an attempt to describe the *tacit* approach of the Contract Managers and takes into account the nature of the requirement (safety), the culpability of the shortcoming and the proactivity of the contractor. For example, there are known cases where it has been decided not to impose penalty points for hitting a safety requirement. Culpability can often be interpreted in different ways and the proactivity of the contractor is also subjective. Although imposing penalty points is discussed in the IPM team, one Contract Manager can make different decisions than the other.

3. In what way do Rijkswaterstaat Contract Managers and the contractors share information?

Information is shared between Rijkswaterstaat Contract Managers and the contractor in various ways. They differ in the use of (computer) systems and the use of meetings. There are projects where they do not use measurement systems and projects where multiple systems are used. There is a lot of difference in the formality of the communication. One Contract Manager directly calls the contractor to discuss relevant matters and the other discusses matters during meetings. Moreover, the communication between Contract Manager and contract differs in frequency of the use of systems and the contact. One Contract Manager will be immediately informed by the contractor of relevant matters and the other will only hear about this at the next meeting.

4. How does the process of imposing penalty points in DBFM contracts relate to the Agency and Stewardship theory?

The relationship between Rijkswaterstaat as the client and the market party as the contractor relates to the relationship between the actors described in the principal-agent problem on which the Agency and Stewardship theory are both based. The Contract Managers of Rijkswaterstaat make a decision on imposing penalty points. The decision to impose penalty points relates to governance through monitoring and incentives described in the Agency theory. The decision to put a penalty point on hold and to have the contractor formulate a control measure relates to governance by means of empowering structures described in the Stewardship theory.

5. How is the approach of Rijkswaterstaat Contract Managers regarding penalty points influenced by the way both parties share information?

The research suggests that frequent and early contact and information sharing concerning penalty points creates more trust and leads to a choice of a control measure rather than imposing penalty points and a discount on the payment as a result. A Contract Manager who frequently exchanges information and is in early contact with the contractor is often closer to the profession and is, therefore, better able to obtain *nice to know*-information. The research suggests that obtaining relatively much *nice to know*-information reduces the demand for *need to know*-information. This suggests that this Contract Manager values monitoring the service that is delivered by the contractor less.

MAIN QUESTION In what way do the theories on agency-stewardship clarify the influence of information sharing between clients and contractors on the approach of Rijkswaterstaat Contract Managers regarding imposing penalty points in the exploitation phase of DBFM contract?

The research suggests the following:

A Contract Manager who moves closer to profession obtains more *nice to know*-information by frequently sharing information and being in early contact with the contractor. Having a lot of *nice-to-know*-information reduces the demand for *need to know*-information. This Contract Manager has less interest in monitoring the service that is delivered by the contractor. This Contract Manager has higher levels of trust and prefers to have a control measure formulated. A higher level of trust and the choice for a control measure relates to the shareholder described in the Stewardship theory. Lower levels of trust, demand for monitoring and choosing to impose penalty points relates to the principal described in the Agency theory.

9.2 Recommendations

The data on the penalty points is not collected centrally at Rijkswaterstaat. All Contract Managers collect the data individually in their self-created format. Due to changes in staff, a part of the data has been lost with the departure of the staff. It is hard to prevent that *nice to know*-information is lost in those circumstances. However, because of inadequate file transfer *need to know*-information is lost as well. Furthermore, the approach of different Contract Managers can diverge without the political or managerial echelon being aware of this. This could be prevented by simply collecting the data centrally in the database of Rijkswaterstaat. Rijkswaterstaat sets very high standards and requirements for contractors in terms of processes and registration of information. This can be seen in the many process requirements that are laid down in the DBFM contract which has been emphasized during the validation interview. In my opinion, Rijkswaterstaat does not set the same requirements for its own organisation.

The research has revealed that the penalty points are discussed within contract teams and in IPM teams. The contractor will escalate if they are of the opinion that they are not treated in a reasonable manner. Contractors can inform higher management or go the Arbitration Court if necessary. The chance of over-enforcement in which the Contract Manager behaves too strictly and subsequently damages the contractor is small. The approach of Contract Managers in terms of imposing penalty points is guided in advance by means of the 'Stramien Boetepunten'. However, the approach of the Contract Managers is not supervised afterwards. The data on imposed penalty points is not centrally collected at Rijkswaterstaat and there is not a department at Rijkswaterstaat that has a complete overview of the state of affairs in terms of imposing penalty points. Therefore, it is uncertain what happens when a Contract Manager is structurally too compliant in terms of penalty points. It is unknown whether this is discussed during meetings and who checks the shortcomings that are not worth penalty points according to the Contract Manager. At the moment, this is only supported by the belief that Contract Managers fight for reasonableness and fairness. The chance of under-enforcement in which the Contract Manager is too focussed on empowerment of the contractor and subsequently falsely favours the contractor is high. It may be beneficial considering to manage the risk of Contract Managers being too compliant. This can be done by keeping an overview of all DBFM projects with regard to imposing penalty points. Subsequently, further explanation may be requested for cases of projects that show clear deviations of the ongoing trend. This way Rijkswaterstaat will be certain that imposing penalty points is a supported decision and the value of the degree of discretion of the Contract Managers is maintained.

10

Reflection

This chapter reflects on the research that has been done. In paragraph 10.1, the added value of the findings of the research and what this has generated in terms of scientific knowledge will be described. Finally, the process of the research and the lessons that were learnt are discussed in paragraph 10.2.

10.1 Findings

As previously mentioned, the majority of the research concerning the DBFM contract has been conducted on the tender and the realisation phase, while there is limited scientific knowledge on the exploitation phase of DBFM projects. This research contributes to the development of knowledge of DBFM projects in the exploitation phase. Certain aspects of DBFM projects in the exploitation phase are clarified in the research. The research has gathered knowledge about the way in which information is shared between the Contract Managers of Rijkswaterstaat and the private party. Moreover, the research has contributed to the development of knowledge about an aspect of the payment mechanism of the DBFM contract: the penalty points. A better understanding has been gained for Contract Managers' approach to imposing penalty points. Finally, interdependencies between factors and factors that influence this approach of the Contract Managers are discussed.

10.2 Process

Before starting this graduation thesis, I had formulated seven goals for personal development. The reflection is formulated on the basis of the assessment of the extent to which the goals that were set have been achieved. The personal development goals are as follows:

1. Reflect!
2. Always want to know more: if you think you know the answer, ask three more questions.
3. Plan and stick to the schedule.
4. Focus: set a clear framework in advance and stick to it.
5. Stay enthusiastic: don't quit halfway and don't do half the job.
6. Seeing criticism as constructive rather than negative.
7. Presenting: improving presentation skills by practicing a lot.

The first goal is to reflect on the research and the choices to be made. This was achieved by keeping track of my considerations in a notebook and going through them regularly to go back to earlier stages of the research. The second goal is to be more thorough in researching a specific matter. Among other things, this was achieved by thoroughly interviewing the involved individuals and because of this a lot of background knowledge have been gained that would not have been possible otherwise. The third goal is to plan and stick to the planned schedule. Throughout the research period, I have planned the research for both long and short term. The overall long-term planning was easier to stick to than the more specific short term planning. This has generally been sufficiently achieved. The fourth goal has been a major challenge throughout the entire period of graduating. Achieving the second goal that allowed for more background knowledge made it more difficult to focus. During the entire period I have been very aware that the scope

that was set was not the whole story and that the observations depended on so many more aspects than just the scope that was set. This made it extremely difficult to focus and structure the results. Additionally, the exploratory nature of the research gives lesser handles on where to go. Thankfully, the Graduation Committee insisted on this to be achieved. The fifth goal is to prevent losing interest during the study. Beforehand, I ensured that the research was of personal interest. The character of the research and the research methods excited and energised me. This was mainly achieved by talking to experts. The sixth goal is about dealing with criticism. Before starting this research, I was of the opinion that receiving criticism is very difficult and, therefore, I had made it a personal development goal. After the research, I realise that giving constructive criticism is perhaps more difficult than receiving it. The aspect of behaviour of people is hard to grasp in a scientific research. From the beginning on, I have been avoiding the personal aspect of the research on the Contract Managers. First, by the preference for a more quantitative method. I had the ongoing urge to look for ways to hide behind more objective and less personal methods. Even though, I was very aware of the fact that a more qualitative and exploratory method would be more suiting. The personal aspect of the research on the Contract Managers and the risk of discovering criticalities in the organisation and the individuals working for it intimidated me. It could have helped if I would have felt less personally involved in the research. I have been seeing the struggle between contract and relationship to be negative. However, this is a continuous process and there is no right or wrong. The opportunity to choose is, even though this sure can be a struggle and a hard choice for the ones involved, the most important part of the contract and cooperation.

The following lesson can be drawn from the results of the research and personal reflection: *balance is key*.

Part V References and appendices

11

References

Al Mamun, A., Rafique Yasser, Q., & Ashikur Rahman, M. (2013). A Discussion of the Suitability of Only One vs More than One Theory for Depicting Corporate Governance. *Modern Economy*, *04*(01), 37–48. https://doi.org/10.4236/me.2013.41005

Bing, L., Akintoye, A., Edwards, P. J., & Hardcastle, C. (2005). The allocation of risk in PPP/PFI construction projects in the UK. *International Journal of Project Management*, *23*(1), 25–35. https://doi.org/10.1016/j.ijproman.2004.04.006

Central Statistical Office. (2019). CBS Statline. Retrieved from https://opendata.cbs.nl/statline/#/CBS/nl/

Central Unit on Purchasing. (1997). Contract Management. *CUP Guidance*, *No. 61*.

Chao-Duivis, M. A. B. (2019). *De zaak van de smeltende dinosaurus: Overpeinzingen bij 22 jaar werken in de wereld van het bouwrecht*.

Chrisman, J. J. (2019). Stewardship Theory: Realism, Relevance, and Family Firm Governance. *Entrepreneurship: Theory and Practice*, *43*(6), 1051–1066. https://doi.org/10.1177/1042258719838472

Combley, R. (Ed. . (2011). *Cambridge business English dictionary*. Cambridge University Press.

Commissie Private Financiering van Infrastructuur. (2008). *Op de goede weg en het juiste spoor*. https://doi.org/10.1017/CBO9781107415324.004

Court of Audit. (2013). Contractmanagement bij DBFMO-projecten. In *Vergaderjaar 2012-2013, 33 639, nr. 2*. Retrieved from http://www.rekenkamer.nl/Publicaties/Onderzoeksrapporten/Introducties/2013/06/Contractmanagement_bij_DBFMO_projecten

Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management Review*, *22*(1), 20–47. https://doi.org/10.5465/AMR.1997.9707180258

De Bruijn, H. (2006). *Prestatiemeting in de publieke sector: Tussen professie en verantwoording* (Second). Den Haag: Uitgeverij LEMMA.

De Bruijn, H., & Ten Heuvelhof, E. (2005). *Handhaving: Het spel tussen inspecteur en inspectee*. Den Haag: Uitgeverij LEMMA.

Fama, E. F., & Jensen, M. C. (1983). Agency Problems and Residual Claims. *The Journal of Law & Economics*, *26*(2), 327–349.

Heurkens, E. (2017). *Repositioning the Management of Urban Area Development in the Netherlands*. (February 2009).

Hirsch, W. Z., & Osborne, E. (2000). Privatization of government services: Pressure-group resistance and service transparency. *Journal of Labor Research*, *21*(2), 315–326. https://doi.org/10.1007/s12122-000-1050-z

Hueskes, M., Koppenjan, J., & Verweij, S. (2016). Publiek-private samenwerking in Nederland en Vlaanderen: een review van veertien proefschriften. *Bestuurskunde*, *25*(2), 90–104. https://doi.org/10.5553/bk/092733872016025002009

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*, 305–360. https://doi.org/http://dx.doi.org/10.1016/0304-405X(76)90026-X

Johansson, V. (2012). Negotiating bureaucrats. *Public Administration*, *90*(4), 1032–1046. https://doi.org/10.1111/j.1467-9299.2012.02025.x

JPI Media Investigations Team. (2019). Billions being spent on wasteful legacy PFI contracts across the country, new investigation shows. Retrieved April 14, 2020, from https://inews.co.uk/news/legacy-pfi-contracts-wasteful-shocking-exclusive-investigation-815305

Koppenjan, J., & de Jong, M. (2018). The introduction of public–private partnerships in the Netherlands as a case of institutional bricolage: The evolution of an Anglo-Saxon transplant in a Rhineland context. *Public Administration*, *96*(1), 171–184. https://doi.org/10.1111/padm.12360

Koppenjan, J., Klijn, E.-H., Warsen, R., Verhoest, K., & Hueskes, M. (2016). *DBFM (O) contracten in de publieke infrastrcutuur in Nederland en Belgie: Dialoog tussen Vlaamse en Nederlandse PPS-beoefenaars en academici*.

Koster, J. H. W., Hoge, W. E., Geerling, A. H., Períe, P. G., Van Baasbank, V. D., & Prinsen, D. J. (2008). *DBFM-Handboek*.

Kuitert, L. (n.d.). *Publieke waardenbelangen van (semi)publieke opdrachtgevers in de bouw: Resultaten voor deelnemers Studie 1*.

Kuitert, L., Volker, L., & Hermans, M. H. (2019). Taking on a wider view: public value interests of construction clients in a changing construction industry. *Construction Management and Economics*, *37*(5), 257–277. https://doi.org/10.1080/01446193.2018.1515496

Lebas, M. J. (1995). Performance measurement and performance management. *International Journal of Production Economics*, *41*(1–3), 23–35. https://doi.org/10.1016/0925-5273(95)00081-X

Lenferink, S., Tillema, T., & Arts, J. (2013). Towards sustainable infrastructure development through integrated contracts: Experiences with inclusiveness in Dutch infrastructure projects. *International Journal of Project Management*, *31*(4), 615–627. https://doi.org/10.1016/j.ijproman.2012.09.014

Lipsky, M. (1969). *Toward a Theory of Street-Level Bureaucracy*.

Lipsky, M. (1980). *Street-Level Bureaucracy*. New york: Russell Sage.

Lovink, K. (2014). *Contract management in DBFM(O) projects*.

Ministry of Finance. (2017). *Voortgangsrapportage DBFM(O) 2016/2017*.

Partnerships UK. (2006). *Operational PFI Projects*.

Reynaers, A.-M. (2014). *It takes two to tangle: Public-Private Partnerschips and their impact on public values*. Vrije Universtiteit Amsterdam.

Rijksoverheid. (n.d.). PPS-contracten. Retrieved from https://www.rijksoverheid.nl/onderwerpen/publiek-private-samenwerking-pps-bij-het-rijk/pps-contractvormen

Rijksoverheid. (2014). *MIRT Projectenboek 2014*.

Rijkswaterstaat. (n.d.-a). Noord-Holland: groot onderhoud wegen 2019/2020. Retrieved February 19, 2020, from https://www.rijkswaterstaat.nl/wegen/projectenoverzicht/noord-holland-groot-onderhoud-wegen/index.aspx

Rijkswaterstaat. (n.d.-b). Rijkswaterstaat Grote Projecten en Onderhoud. Retrieved from https://www.rijkswaterstaat.nl/over-ons/onze-organisatie/organisatiestructuur/grote-projecten-en-onderhoud/index.aspx

Rijkswaterstaat. (n.d.-c). Rijkswaterstaat Programma's, Projecten en Onderhoud. Retrieved from https://www.rijkswaterstaat.nl/over-ons/onze-organisatie/organisatiestructuur/programmas-projecten-en-onderhoud/index.aspx

Rijkswaterstaat. (2017a). DBFM contract Coentunneltracé. *Community of Practice DBFM Exploitation Phase*.

Rijkswaterstaat. (2017b). *Voortgangsrapportage DBFM(O) 2016/2017*.

Rijkswaterstaat. (2018). *NIS: DBFM-contracten RWS Areaal HWN/HVWN/HWS [A3/A4]*.

Rijkswaterstaat. (2019). *Toekomstige Opgave Rijkswaterstaat: Perspectief op de uitdagingen en verbetermogelijkheden in de GWW-sector*.

Rijkswaterstaat, Rijksvastgoedbedrijf, ProRail, Bouwend Nederland, NL Ingenieurs, Vereniging van Waterbouwers, … Astrin. (2015). *Marktvisie: Samenwerken aan een vitale en duurzame sector*. 9. Retrieved from https://www.marktvisie.nu

Spackman, M. (2002). Public-private partnership: Lessons from the British approach. *Economic Systems*, *26*(3), 283–301. https://doi.org/10.1016/S0939-3625(02)00048-1

The World Bank. (2018). *Procurement Guidance: Contract Management*. Retrieved from http://usir.salford.ac.uk/8019/

Tosi, H. L., Brownlee, A. L., Silva, P., & Katz, J. P. (2003). An Empirical Exploration of Decision-making Under Agency Controls and Stewardship Structure. *Journal of Management Studies*, *40*(8), 2053–2071. https://doi.org/10.1046/j.1467-6486.2003.00411.x

Tweede Kamer der Staten-Generaal. (2017). *Kamerstuk 28753, nr. 44*. Retrieved from https://zoek.officielebekendmakingen.nl/kst-28753-44.html

UWV Afdeling arbeidsmarktinformatie en - advies. (2013). *De bouwnijverheid: Sectorbeschrijving*.

Van Slyke, D. M. (2006). Agents or stewards: Using theory to understand the government-nonprofit social service contracting relationship. *Journal of Public Administration Research and Theory*, *17*(2), 157–187. https://doi.org/10.1093/jopart/mul012

Verschuren, P., Doorewaard, H., & Mellion, M. (2010). *Designing a research project* (2nd ed.). https://doi.org/10.1192/bjp.111.479.1009-a

Verweij, S. (2015a). Achieving satisfaction when implementing PPP transportation infrastructure projects: A qualitative comparative analysis of the A15 highway DBFM project. *International Journal of Project Management*, *33*(1), 189–200. https://doi.org/10.1016/j.ijproman.2014.05.004

Verweij, S. (2015b). Producing satisfactory outcomes in the implementation phase of PPP infrastructure projects : A fuzzy set qualitative comparative analysis of 27 road constructions in the Netherlands. *International Journal of Project Management*, *33*(8), 1877–1887. https://doi.org/10.1016/j.ijproman.2015.08.006

Verweij, S. (2016). *DBFM: Als De Schop De Grond Is Ingegaan: Management En Publiek-Private Samenwerking In De Uitvoering Van Weginfrastructuurprojecten*. *67*(2), 43.

Verweij, S., Loomans, O., & Leendertse, W. (2019). The Role of the Public Partner in Innovation in Transport Infrastructure PPPs: A Qualitative Comparative Analysis of Nine Dutch DBFM Projects. *Public Works Management and Policy*. https://doi.org/10.1177/1087724X19847215

Winch, G. M., Onishi, M., & Schmidt, S. (2012). *Taking Stock of PPP and PFI Around the World*.

Xiaowen, B., & France, B. (2013). Information Sharing: As a Type of Information Behavior. *Proceedings of the Annual Conference of CAIS / Actes Du Congrès Annuel de l'ACSI*, 1–14. https://doi.org/10.29173/cais198

12

Appendices

Appendix A Contract Management

Figure 12.1 Contract Manager responsibilities (The World Bank, 2018, p. 6)

Appendix B DBFM contracts RWS area

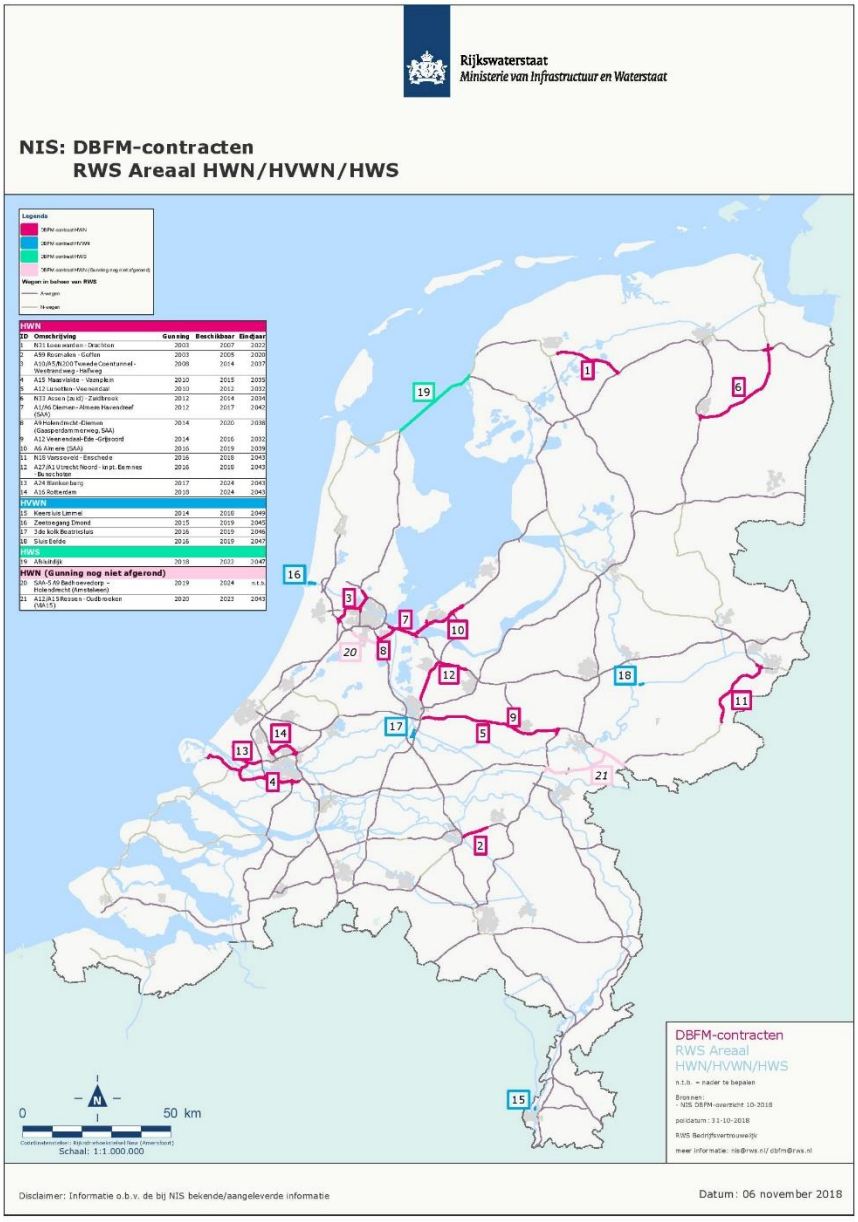

Figure 12.2 Map of DBFM contracts (Rijkswaterstaat, 2018)

Appendix C Timeline DBFM projects

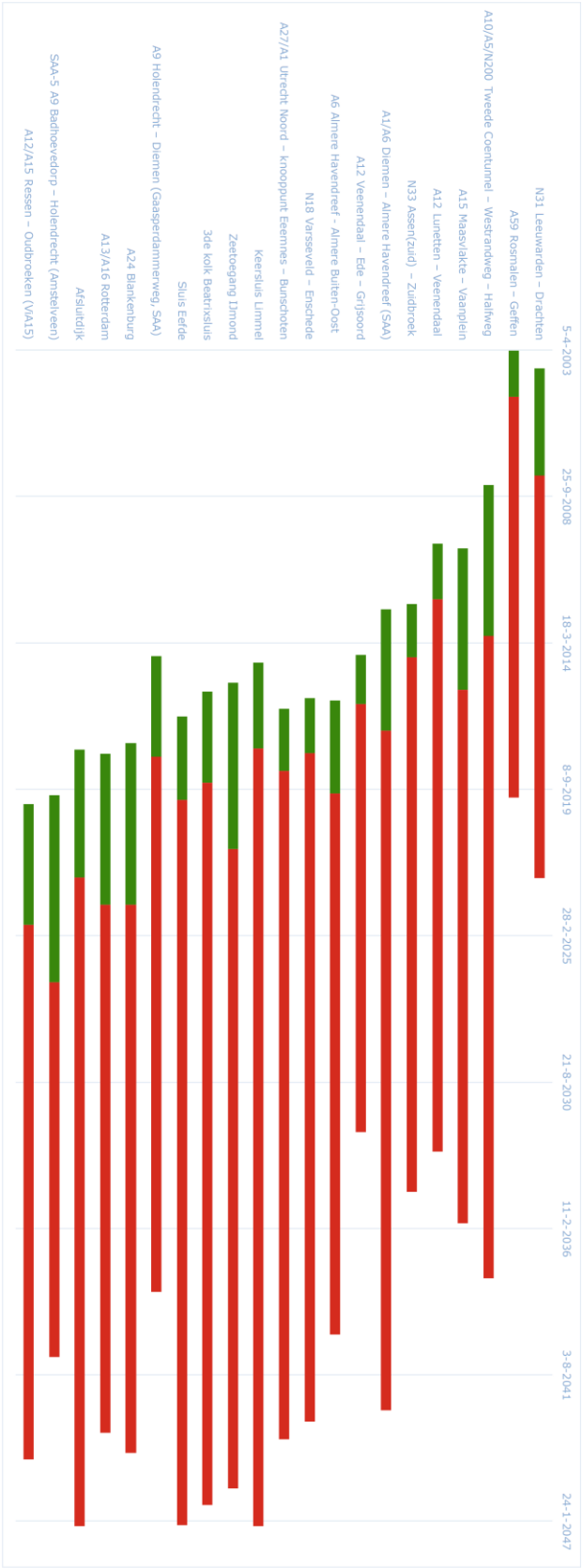

Figure 12.3 Timeline of DBFM projects

Appendix D Projects' penalty points in depth

After reading the literature and speaking to the Contract Managers there are some expectations of how the penalty points expected to evolve. Therefore, the graph of a hypothetical project was constructed.

Hypothetical project

In Figure 12.4 a graph was constructed of a hypothetical project. The vertical axis shows the amount of penalty points that are guessed/expected to be imposed and the horizontal axis shows the years that the project is in the exploitation phase. The duration of the exploitation phase of the hypothetical project is 25 years.

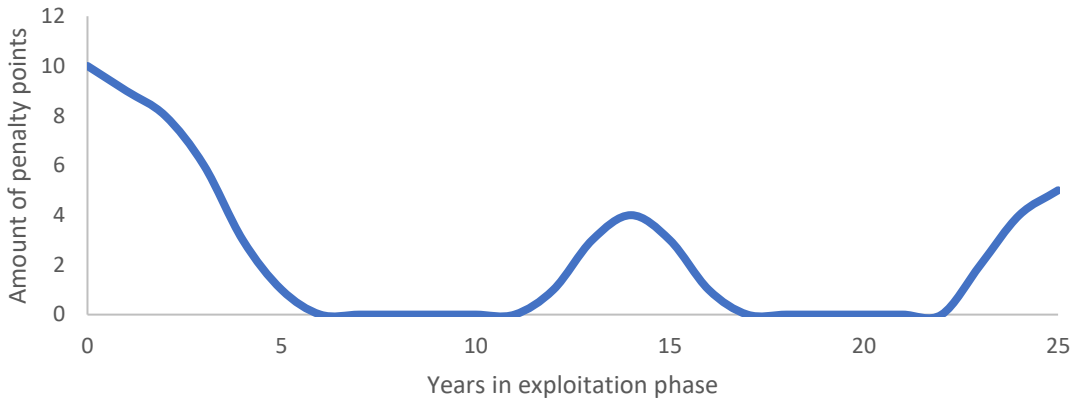

Figure 12.4 Amount of penalty points per year for a hypothetical project

The figure shows a lot of imposed penalty points in the first years of the exploitation phase. There may be various causes explaining the first peak in the graph. The expectation is that most new projects have teething problems occurring in the early stages of the project. The systems have to be settled in and just after commissioning the unforeseen problems become visible. In section 2.2.1 it was discussed that the IPM-team in the exploitation phase is different from the team in the realisation phase. The department GPO is responsible for the realisation phase and the department PPO for the exploitation phase. After the realisation phase the IPM-team from PPO takes over the responsibility from the IPM-team from GPO. Mostly, the team of the contractor changes as well. At that point, both of the IPM-teams have to adjust to the their new working environment, the project and the new team composition. However the intensive period of familiarisation with these aspects, this could still be a difficult challenge. In this situation, the number of penalty points imposed is expected to be high, although, decreasing after the teams have become acquainted with their position and the project. A period of little to none imposed penalty points is expected after the first peak.

Major maintenance is often needed every 15 years (Rijkswaterstaat, n.d.-a). The first complications due to the reduced quality of the asset are expected to occur after 10 years in the exploitation phase. This is how the second peak in the graph of Figure 12.4 is established. After the maintenance has been carried out, another period of little to none imposed penalty points is expected.

Near the end of the contract the graph is expected to go up again. Again, due to the reduction of the quality of the asset. Maybe there might be complications when transferring the tasks or the contractor becomes negligence near the end of the contract. The relationship may be affected by uncertainties in the contract regarding the transfer.

These considerations do not include the specific characteristics of the projects. The history of cooperation and any difficulties in the realisation phase are not taken in consideration. These aspects are very import for the eventual events.

Appendix E Available data on penalty points

The Contract Managers were asked to share data on categories and whether or not shortcomings that are worth penalty points eventually end up in penalty points. Table 12.1 shows the amount of projects that were able to share the data on these topics. Twelve DBFM projects in the exploitation phase were able to share the amount of penalty points were imposed and in which quarter or year. Two of those projects did not share data on the categories nor did they share data on imposing. Seven projects were able to share data on categories and seven projects were able to share data on imposing. Four of the twelve project were able to share both data on categories and imposing. There is an overlap in these four projects and the seven projects with data available on categories and imposing.

Amount of projects (total = 12 projects)	No data available on categories	Data available on categories
No data available on imposing	2	7
Data available on imposing	7	4

Table 12.1 Available data on categories and imposing

In Figure 12.5 the total amount of penalty points that were shared by the Contract Managers of all of the twelve DBFM projects are shown. For each penalty points it is shown what data is available on that specific penalty points. 256 penalty points were specified by the Contract Managers in total. For 67 of them there is no extra information available. For 127 of the penalty points data is only available of whether or not they were imposed. For 45 penalty points data is available on the categories of the imposed penalty points. And for 17 penalty points both information on categories and imposing is available.

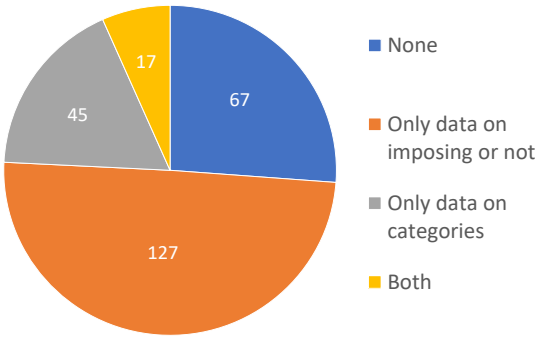

Figure 12.5 Chart on available data

In Figure 12.6 it is shown that of the total of 256 penalty points that were shared by the Contract Managers of 144 of the penalty points data is available on imposing. These penalty points are, thus, imposed. However, there are another 20 shortcomings specified that were worthy of penalty points. These shortcomings have not been imposed eventually.

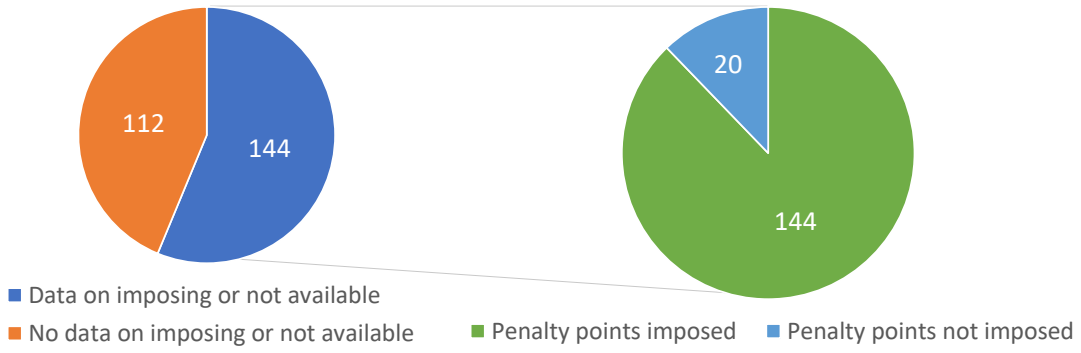

Figure 12.6 Charts on imposed penalty points

Figure 12.7 shows that on 62 of the total of 256 penalty points that were shared by the Contract Managers data is available on the category of the imposed penalty points. The graph on the right shows that the imposed penalty points are evenly distributed among the categories. This is different from the prediction of the Contract Managers. This can be explained by the fact that one shortcoming on a particular project mainly determines this distribution. Due to the confidentiality of the research, this cannot be discussed further.

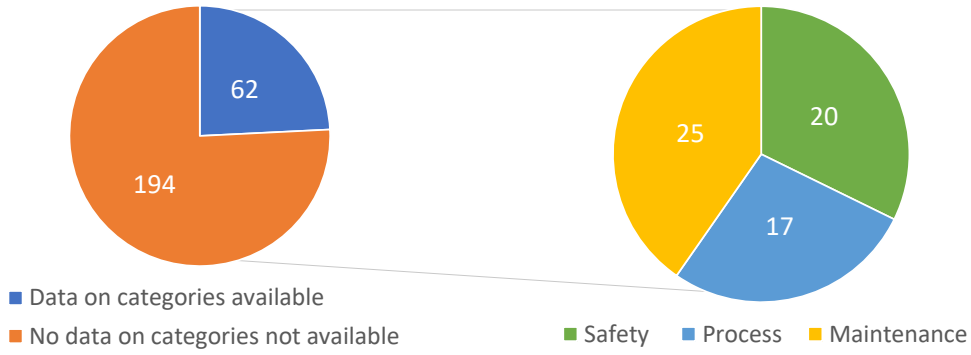

Figure 12.7 Charts on categories

Figure 12.8 shows that only 17 of the total of 256 penalty points both the categories and data on imposing was shared by the Contract Managers. The graph on the right shows that 16 of the total of 20 penalty points in the category of safety are eventually imposed. This is not in accordance with the 'Stramien Boetepunten' the safety category is imposed in all circumstances.

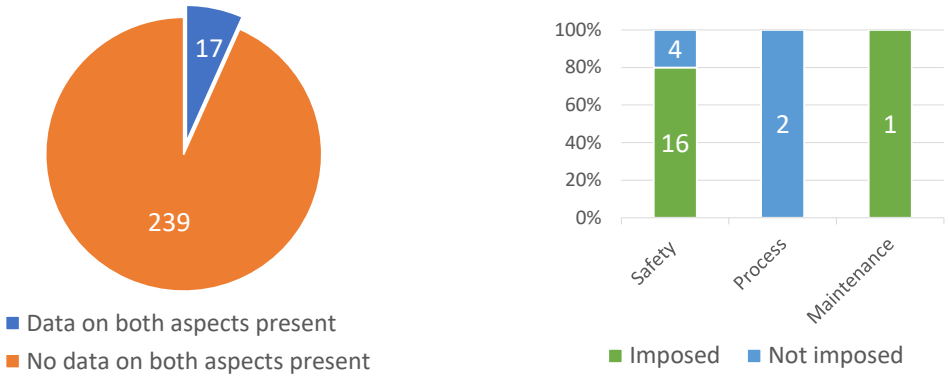

Figure 12.8 Charts on categories on (not) imposed penalty points

Appendix F Sharing and exchanging information

The following meetings in which both Rijkswaterstaat as well as the contractor take place were mentioned by the Contract Managers during informal conversation and interviews:

Meetings	Definition
BOT consultation	Informal meeting between Rijkswaterstaat and the contractor. In Dutch: Benen Op Tafel (BOT).
Changes meeting	The changes in contract will be assessed during this meeting.
Contract consultation	Formal meeting between Rijkswaterstaat and the contractor. Formal decision are made that have been discussed during informal meetings.
Damage consultation	The damages will be assessed during this meeting.
Environmental consultation	The environmental activities will be assessed during this meeting.
Operations consultation	The operations will be assessed during this meeting.
Penalty points consultation	The penalty points will be assessed during this meeting.
PMS consultation	The PMS will be assessed during this meeting.
Project follow-up	Constructive meeting between the project teams of Rijkswaterstaat and the contractor.
Shortcomings consultation	The shortcomings will be assessed during this meeting.
TOBO	In Dutch: Technisch Overleg Beheer en Onderhoud (TOBO). Same as the contract consultation.

Table 12.2 Overview client-contractor meetings

The following systems sharing and exchanging information in which both Rijkswaterstaat as well as the contractor take place were mentioned by the Contract Managers during informal conversation and interviews:

Systems of communication	Definition
Telephone	A way of communicating indirectly to someone
E-mail	Electronic mail
PMS	Performance Measurement System
Relatics	System in which the requirements are demonstrated and deviations and changes are registered
Maintenance Management System	System in which all incoming notifications are registered

Table 12.3 Overview client-contractor systems

The following audits in which are performed on the service of that the contractor delivers were mentioned by the Contract Managers during informal conversation and interviews:

Audits	Definition
PMS audit	Reliability test on the Performance Measurement System
SCB audit	Reliability test on the System-oriented Contract Management
EDP audit	Reliability test on the Electronic Data Processing
Road inspector	Road inspectors inspect the safety of the Dutch roadway network

Table 12.4 Overview of audits

	A	B	C	D
Meetings				
BOT consultation	X	X	X	
Changes meeting		X		
Contract consultation	X	X	X	
Damage consultation		X		
Environmental consultation			X	
Operations consultation		X		
Penalty points consultation		X		
PMS consultation		X		
Project follow-up	X			
Shortcomings consultation		X		
TOBO				X
Systems of communication				
Telephone	X	X	X	X
E-mail	X	X	X	X
PMS	X	X		
Relatics			X	
Maintenance Management System			X	
Audits				
PMS audit	X	X		
SCB audit	X	X	X	
EDP audit	X	X		
Road inspector	X	X	X	X

Table 12.5 Overview of information sharing and exchanging between client and contractor

Appendix G Individual case findings

[Appendix is not publicly accessible]

G.1 Case A

[Paragraph is not publicly accessible]

G.2 Case B

[Paragraph is not publicly accessible]

G.3 Case C

[Paragraph is not publicly accessible]

G.4 Case D

[Paragraph is not publicly accessible]

Appendix H Interview protocol

Informatie voor gesprekspartners

Introductie

Dit gesprek wordt gehouden in het kader van het onderzoek naar het opleggen van boetepunten in de exploitatiefase van DBFM projecten en de invloed van het delen van informatie hierop. Ik voer dit onderzoek uit om de master Construction Management and Engineering aan de faculteit Civiele Techniek van de TU Delft af te ronden. Hierbij word ik ondersteund mijn afstudeercommissie bestaande uit prof. Bakker en twee docenten van de TU Delft en Danny Zwerk, die werkzaam is op de afdeling ICG GPO van Rijkswaterstaat.

Aanleiding voor het onderzoek

Ik heb Rijkswaterstaat benaderd met de interesse om onderzoek te doen naar DBFM projecten in de exploitatiefase. Samen met mijn begeleider Danny Zwerk hebben we toen de focus op boetepunten aangebracht naar aanleiding van de rapporten van de Rekenkamer en het Ministerie van Financiën en de Kamervragen, die een aantal jaar geleden zijn gesteld (Court of Audit, 2013; Ministry of Finance, 2017; Tweede Kamer der Staten-Generaal, 2017). Na gesprekken met verschillende contractmanager en bevindingen vanuit de literatuur heb ik zelf de focus aangebracht van de invloed van informatiedeling op dit gebied.

De onderzoeksvragen

In het onderzoek staat de volgende vraag centraal:

Hoe verklaren de theorieën de invloed van informatiedeling en -uitwisseling tussen Rijkswaterstaat en de aannemer op de aanpak van Rijkswaterstaat Contract Managers bij het opleggen van boetepunten in de exploitatiefase van DBFM projecten?

Hierbij maak ik gebruik van de wat meer algemene theorie over Principaal-Agent en Stewardship. Daarnaast gebruik ik ook specifiekere theorieën over prestatiemeting en handhaving. Hierin komt duidelijk de informatieasymmetrie die kenmerkend is voor de relatie tussen opdrachtgever en -nemer naar voren. Dit is de reden dat het onderzoek zicht focust op het delen van informatie.

Na een korte kennismaking en het toelichten van de aanleiding voor het onderzoek en de onderzoeksvragen, wil ik u in het gesprek vragen naar uw achtergrond en functie in het project en vervolgens naar uw beelden over het opleggen van boetepunten en de rol van het delen van informatie.

Vertrouwelijkheid van informatie verkregen via het onderzoek

De interviews en alle data en informatie die via de interviews wordt verkregen blijft vertrouwelijk en zal door de onderzoeker niet worden gedeeld met derden. Wel kan de onderzoeker informatie uit het interview in geabstraheerde vorm verwerken in de definitieve rapportage, maar de informatie zal niet traceerbaar zijn naar individuele respondenten/organisaties. In alle overige gevallen zal vooraf bij de geïnterviewde om goedkeuring en toestemming van de weergave van de passage in het rapport worden gevraagd. Ik zou het gesprek graag opnemen voor eigen gebruik in verband met aantekeningen maken tijdens het interview en de uitwerking achteraf. Indien er behoefte aan is, kan een gespreksverslag worden nagezonden.

Appendix I Interview questions

I.1 Interview questions Rijkswaterstaat

Vragen gerelateerd aan de gesprekspartner van de OG

- Zou u me meer kunnen vertellen over uzelf – uw achtergrond – en daarna over uw huidige functie?
- Met wie werkt u als contract manager samen? Wat is uw specifieke rol in het team?

Vragen gerelateerd aan het project

- Kunt u me meer vertellen over het huidige project waarvan u Contract Manager bent?
- Hoe zou u het project relatief aan andere DBFM projecten definiëren?
- Hoe zou u de samenwerking in DBFM projecten karakteriseren in het algemeen en in uw project in het bijzonder?

Vragen gerelateerd aan informatiedeling

- Op welke wijze wordt er informatie gedeeld? Wanneer, hoe en hoe vaak is er contact?
- Op welke momenten wordt er informatie gedeeld?
- Weet u of er verschillen bestaan tussen hoe OG en ON in DBFM contracten informatie delen? Wat vindt u daarvan?
- Wat weet u en vindt u van de kwaliteit van de informatie die gedeeld wordt? Is die van voldoende niveau om uw werk als contractmanager te kunnen uitvoeren?
- Kunnen we een paar belangrijke momenten bespreken en dan specifiek ingaan op informatiedeling?

Vragen gerelateerd aan boetepunten

- Op welke wijze wordt informatie omtrent boetepunten gedeeld?
- Op welke manier speelt het delen van informatie een rol bij de beslissing over de boetepunten?
- Verandert de *informatievoorziening* indien er discussie is over boetepunten?
- Is de informatievoorziening omtrent boetepunten stabiel of kan deze veranderen? Op de lange termijn? Per situatie?

Slot van interview

Dit waren alle vragen die ik had voorbereid. Wilt u verder nog iets toevoegen? Heeft u vragen gemist? Meer verwante informatie? Heel erg bedankt voor uw tijd. Als u interesse heeft, kan ik een kopie van mijn thesis sturen.

I.2 Interview questions contractor

Vragen gerelateerd aan de gesprekspartner van de ON

- Zou u me meer kunnen vertellen over uzelf – uw achtergrond – en daarna over uw huidige functie?
- Met wie werkt u samen in uw functie? Wat is uw specifieke rol in het team?

Vragen gerelateerd aan het project

- Kunt u me meer vertellen over het huidige project waar u werkzaam bent?
- Hoe zou u de samenwerking in DBFM projecten omschrijven in het algemeen? En in uw project in het bijzonder?
  Wanneer, hoe en hoe vaak contact?

Vragen gerelateerd aan informatiedeling

- Op welke wijze wordt er informatie gedeeld tussen ON en OG? Wanneer, hoe en hoe vaak is er contact? Hebben jullie ook informatie van RWS nodig?
- Op welke momenten wordt er informatie gedeeld tussen ON en OG
- Weet u of er verschillen bestaan tussen hoe ON en OG in DBFM contracten informatie delen?
- Wat weet u en vindt u van de kwaliteit van de informatie die gedeeld wordt?
  Is die van voldoende niveau om uw werk te kunnen uitvoeren?
- Kunnen we een paar belangrijke momenten bespreken en dan specifiek ingaan op informatiedeling?

Vragen gerelateerd aan boetepunten

- Hoe deelt u informatie over boetepunten met de OG?
- Denkt u dat de informatievoorziening een rol speelt bij het besluit over boetepunten?
  Op welke manier?
- Verandert *de informatievoorziening* indien er discussie is over boetepunten?
- Is de informatievoorziening omtrent boetepunten stabiel of kan deze veranderen? Op de lange termijn? Per situatie?

Slot van interview

Dit waren alle vragen die ik had voorbereid. Wilt u verder nog iets toevoegen? Heeft u vragen gemist? Meer verwante informatie? Heel erg bedankt voor je tijd. Als u interesse heeft, kan ik een kopie van mijn thesis sturen.

I.3 Validation interview questions

Vragen gerelateerd aan de gesprekspartner

- Zou u me meer kunnen vertellen over uzelf – uw achtergrond – en daarna over uw huidige werk?
- Met wie werkt u voornamelijk samen? Wat is uw specifieke rol in het team?
- In hoeverre heeft u iets te maken met boetepunten? In hoeverre weet u hoe er met boetepunten wordt gehandeld?

Vragen gerelateerd aan het project

- Kunt u me meer vertellen over het huidige project waarvan u Contract Manager bent?
- Hoe zou u het project relatief aan andere DBFM projecten definiëren?

Ik wilde aan de hand van een aantal stellingen vandaag verschillende aspecten van mijn onderzoek te bespreken. Deze stellingen zijn geen conclusies van mijn onderzoek en missen meestal een vorm van nuance, maar die kunnen we samen aanbrengen. Ik merk dat het onderwerp niet zo zwart-wit is, maar op deze manier heb ik het wel zo neergezet. Deze stellingen zijn vrij voor eigen interpretatie.

Stellingen gerelateerd aan DBFM

- De geest van het contract is belangrijker dan de letter.
- De Marktvisie is belangrijker dan het contract.
- Een dik of een dun contract?
- Continuïteit of wisseling van de wacht?

Stellingen gerelateerd aan informatiedeling

- Hoe groter het project, hoe formeler de samenwerking.
- Hoe transparanter de aannemer hoe beter.

Stellingen gerelateerd aan boetepunten

- Een proactieve opdrachtnemer maakt minder kans op boetepunten.
- Boetepunten zijn geen doel, maar een middel/prikkel.
- Boetepunten zijn goede instrumenten om een win-winsituatie te creëren.
- Er is weinig verantwoording.

Slot van interview

Appendix J Within case findings matrix

[transcript is not publicly accessible]

Appendix K Interview transcriptions

[transcript is not publicly accessible]

K.1 Interview CA_RWS

CONTRACT MANAGER OF RIJKSWATERSTAAT

[transcript is not publicly accessible]

K.2 Interview CB_RWS

CONTRACT MANAGER OF RIJKSWATERSTAAT

[transcript is not publicly accessible]

K.3 Interview CCD_RWS

CONTRACT MANAGER OF RIJKSWATERSTAAT

[transcript is not publicly accessible]

K.4 Interview CC_CON

CONTRACT MANAGER OF THE SPC

[transcript is not publicly accessible]

K.5 Interview CD_CON

CONTRACT MANAGER OF THE SPC

[transcript is not publicly accessible]

K.6 Validation PM_RWS

PROJECT MANAGER WITH EXPERIENCE IN CONTRACT MANAGEMENT IN DIFFERENT DBFM PROJECTS

[transcript is not publicly accessible]

TU Delft

Water. Wegen. Werken. Rijkswaterstaat.