First Marine International

a company of

Royal HaskoningDHV

Enhancing Society Together

Scottish Government

Ferguson Marine (Port Glasgow) Limited

Potential improvements study

Case ref: 605753

Final report

PC3874

23 January 2023

First Marine International

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Ferguson Marine
Potential improvements study

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1 EXECUTIVE SUMMARY

1.1.1 Ferguson Marine (Port Glasgow) Limited (FMPG) is a shipyard based on the lower River Clyde in Scotland, UK. The Scottish Government (SG) owns the shipyard [redacted] First Marine International (FMI) completed a detailed benchmarking and productivity assessment of FMPG in early 2021. [redacted]

1.1.2 SG has commissioned a study to identify ways to improve FMPG [redacted] over a time horizon of [redacted] years. It issued a contract to FMI in July 2022 to undertake the work and produce this Final report.

Target product mix

1.1.3 In consultation with FMPG, the following target product mix has been established and used as the basis for analysis and optimisation of shipyard facilities and processes:

[redacted]

[redacted]

[redacted]

Target productivity

1.1.7 A high-level review of the EMPG cost structure has been undertaken. It appears that the shipyard would need [redacted] However, the competitive environment changes frequently and may become more demanding in the time required to implement the Development plan and realise its benefits. [redacted]

[redacted]

[redacted]

[redacted]

Return on investment

[redacted]

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2 INTRODUCTION

2.1 Background

2.1.1 Ferguson Marine (Port Glasgow) Limited (FMPG) is a shipyard based on the lower River Clyde in Scotland, UK. The Scottish Government (SG) owns the shipyard. [redacted] SG has commissioned a report to identify ways to improve FMPG [redacted] over a time horizon of [redacted] years.

2.1.2 First Marine International (FMI) completed a detailed benchmarking and productivity assessment of FMPG in early 2021. [redacted]

2.1.3 Subsequently, FMPG requested assistance from FMI to identify measures that could be implemented to improve the [redacted] he yard [redacted] The work has been funded by SG which, following a competitive tendering process, issued a contract to FMI in July 2022. This document is the Final report of the study.

[redacted]

2.1.7 This Final report of the study provides updated assumptions and findings as well as the results of the FMI analysis and development of improvement initiatives.

2.2 Objectives

2.2.1 The overall objectives are as follows:

[redacted]

2.3 Scope of work

2.3.1 The proposed scope of work for the study was:

1. Clarification of the target product mix and target productivity and planned shipbuilding strategy, including the 'make vs buy' policy

[redacted]

4. High-level estimation of the timeline and capital investment required to implement the measures identified

2.3.2 As discussed later in the report, some shipyard data needed for the FMI analysis did not exist. FMI therefore developed assumptions to complete the work in a timely manner.

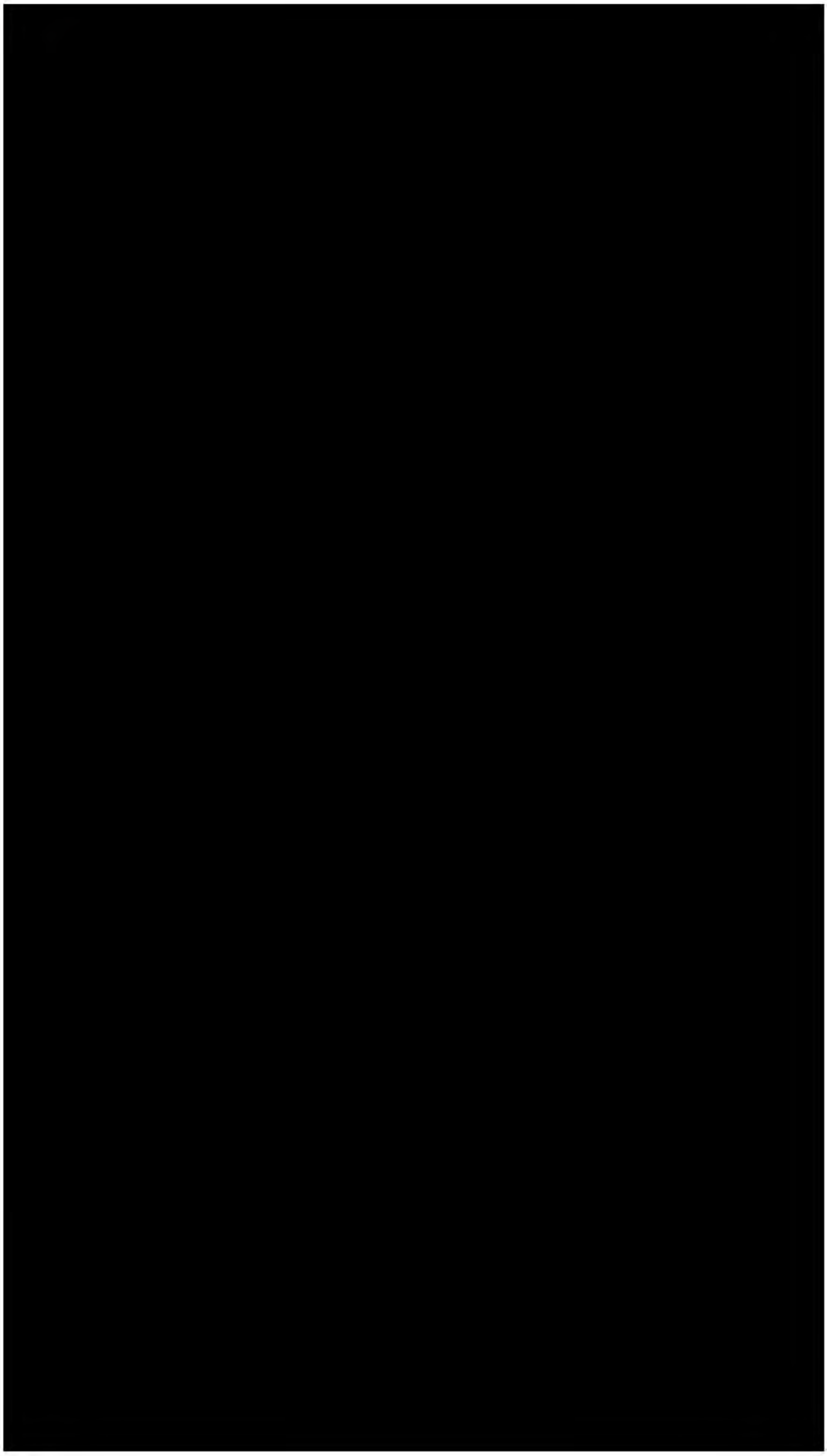
3 APPROACH AND METHODOLOGY

3.1 Approach

3.1.1 FMI collaborated with FMPG to undertake the study, although work was conducted largely by FMI consultants. [redacted] FMI provided SG with periodic progress updates and responded to SG's questions and concerns, and FMPG separately briefed the FMPG Board.

3.1.2 FMI conducted a shipyard visit early in the study, although most of the FMI work was performed in FMI offices. Environmental impact of the work was minimised by limiting travel to that which was strictly necessary. The visit was supplemented by extensive use of videoconferencing and email.

3.1.3 The study approach followed the flow shown in Figure 3.1. [redacted]



4 CURRENT FACILITY LAYOUT AND PRINCIPAL CHARACTERISTICS

4.1 Current layout

4.1.1 The FMPG facility layout, with major workshops and areas indicated, is shown in Figure 4.1.

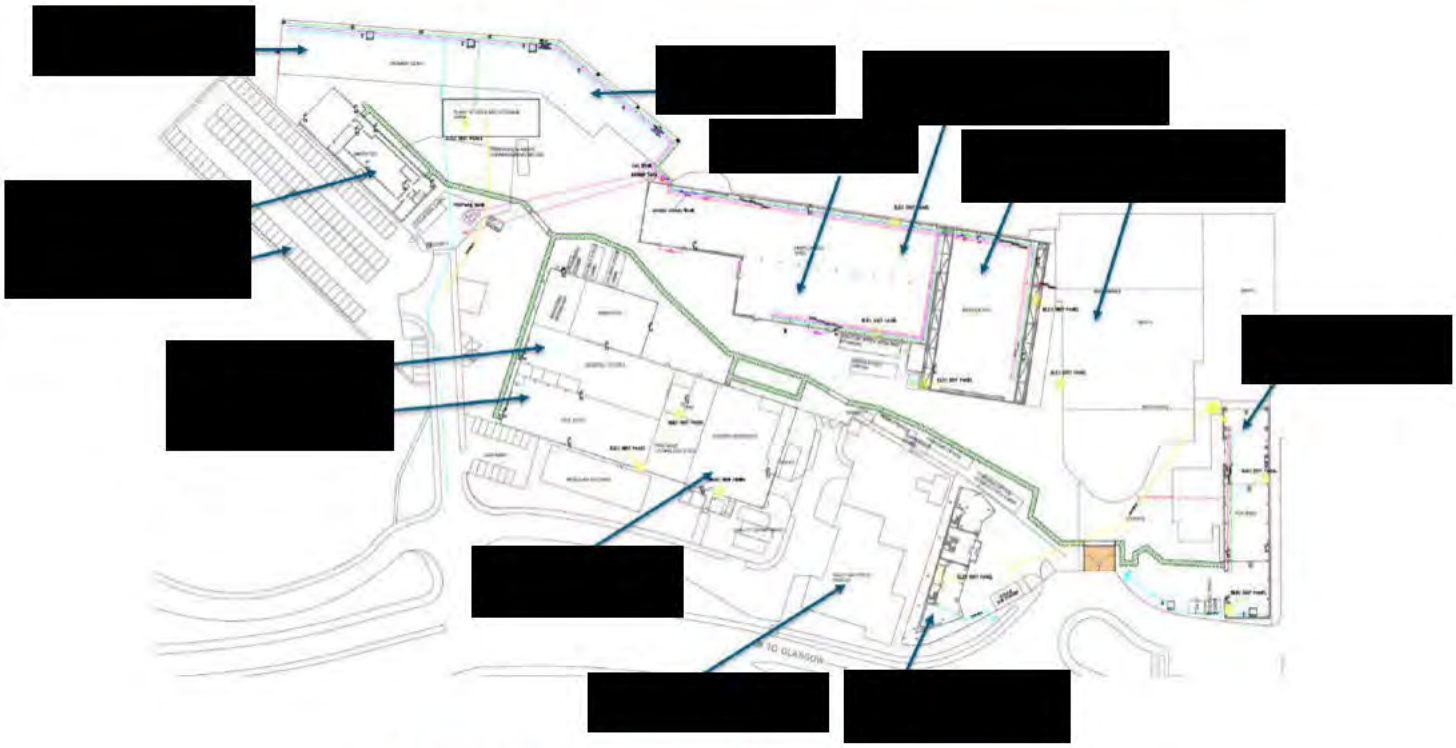
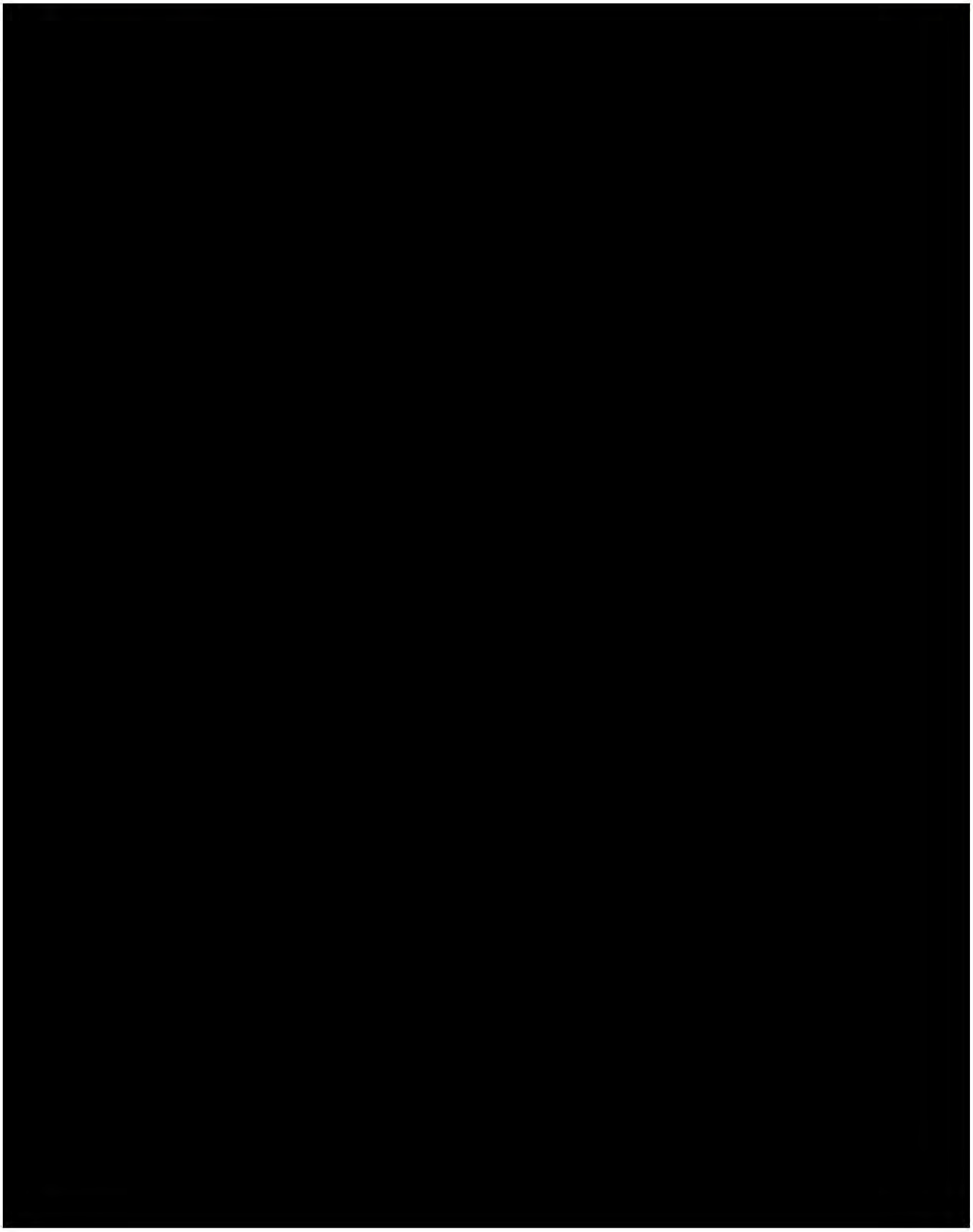
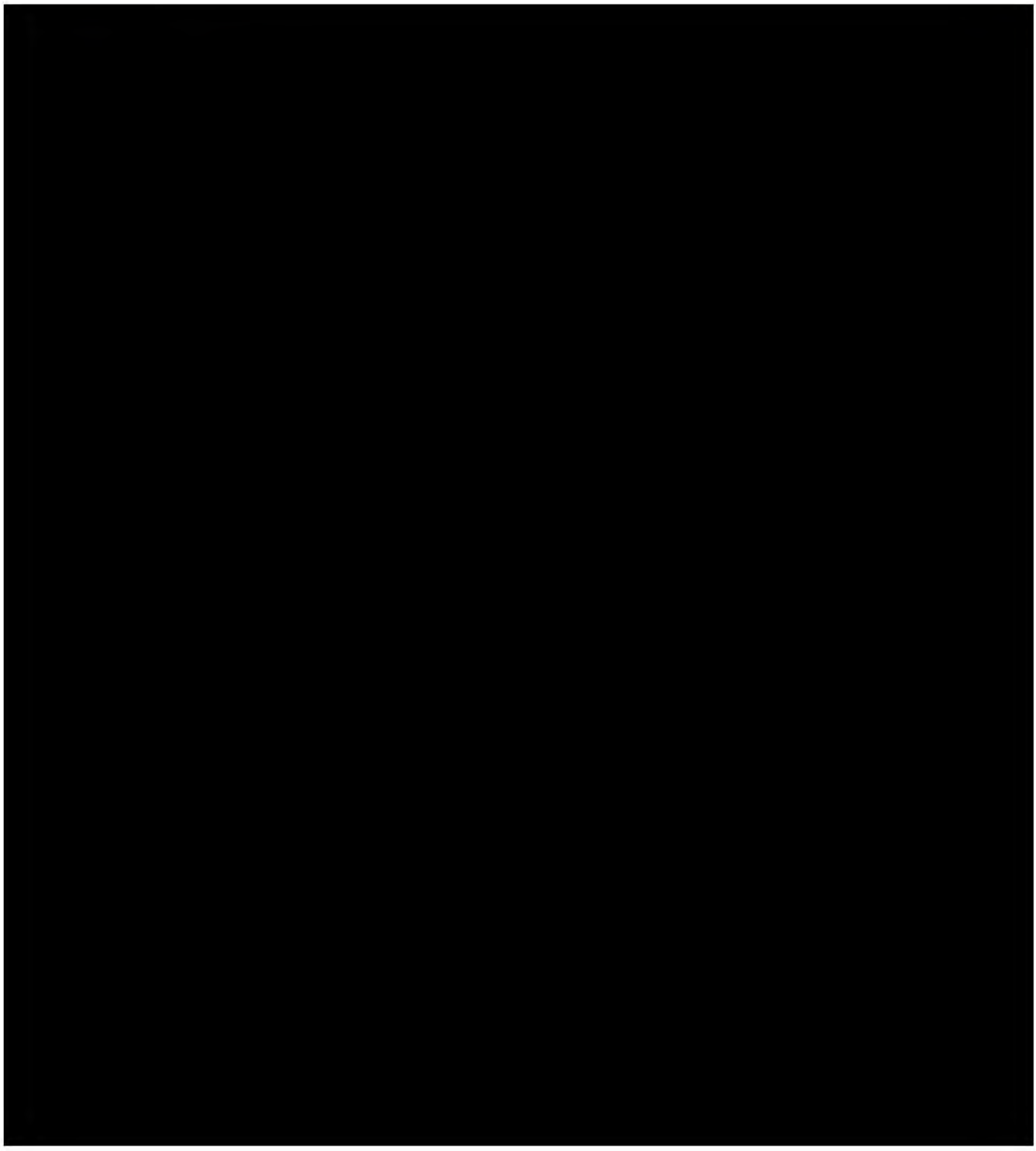


Figure 4.1 – Current FMPG shipyard layout

4.2 Principal characteristics





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5 PRODUCT MIX AND THROUGHPUT

5.1 Product mix

5.1.1 A number of variables must be established as the basis for analysis and optimisation of the shipyard facilities and processes. Among these are the product mix and throughput, the yard's shipbuilding strategy and the target productivity.

[redacted]

[redacted]

5.2 [redacted]

[redacted]

[redacted]

5.3

[redacted]

5.4 Throughput basis of optimisation

[redacted]

5.5 Potential products beyond the [redacted] horizon

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6 SHIPBUILDING STRATEGY

6.1 Shipbuilding strategy overview

[redacted]

6.2 Shipbuilding strategy key points

[redacted]

6.3 [redacted]

[redacted]

[redacted]

[redacted]

6.4 [redacted]

[redacted]

[redacted]

6.5 [redacted]

[redacted]

6.6 Make vs buy strategy

6.6.1 A shipbuilding strategy includes a make vs buy strategy that reflects the company's core competencies and is aligned with the shipyard facilities and workforce skills. It is applied to all projects and can be amended for project-specific special circumstances. It is also revised from time to time based on changes in the shipyard or in the supply chain. [redacted]

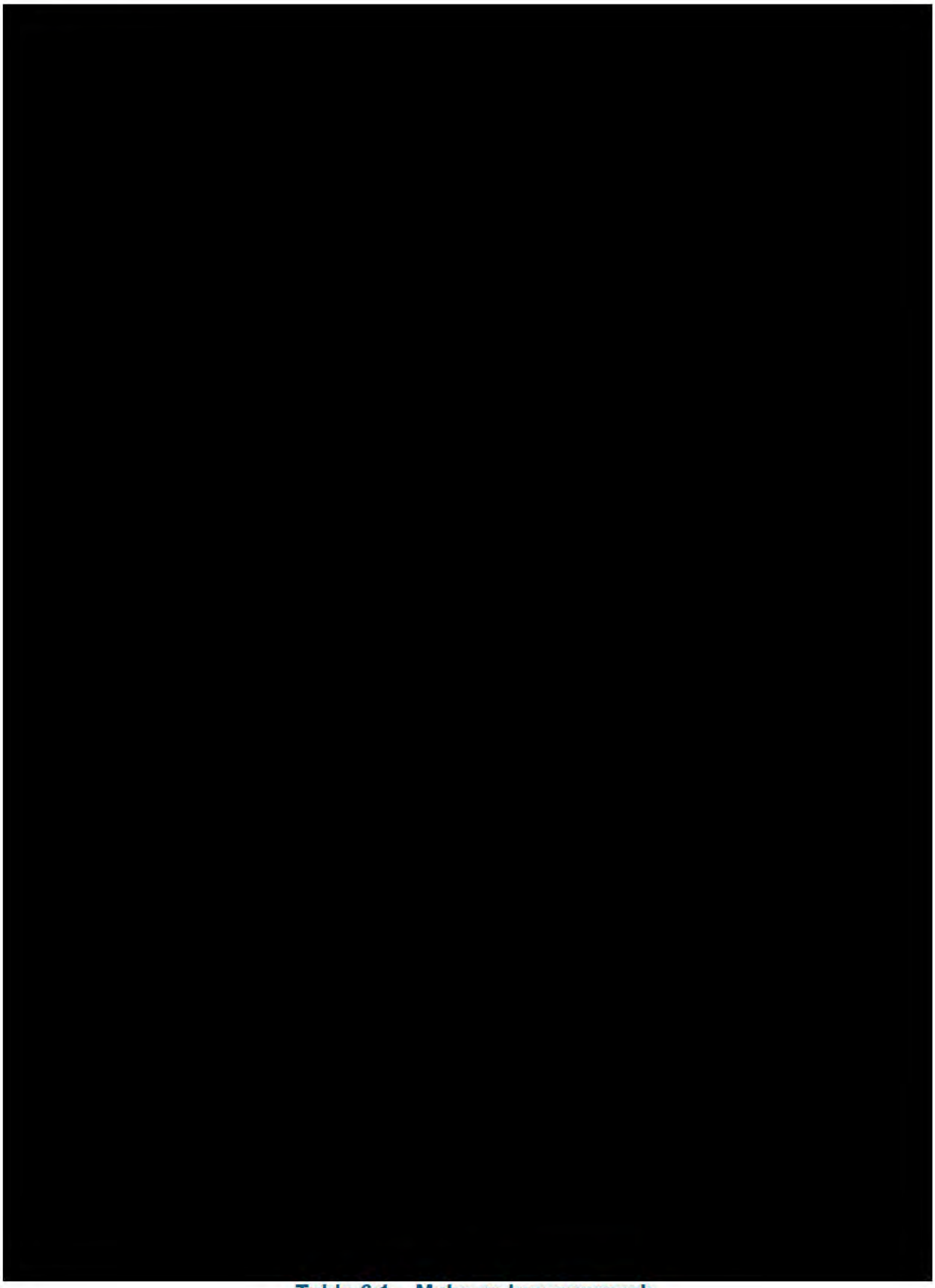


Table 6.1 – Make vs buy approach

7 STRUCTURE OF SHIP COST AND TARGET PRODUCTIVITY

7.1 Background

[redacted]

7.2 Estimate review

[redacted]

[redacted]

7.3 Labour cost

[redacted]

7.4 Overheads

[redacted]

7.5 Target performance

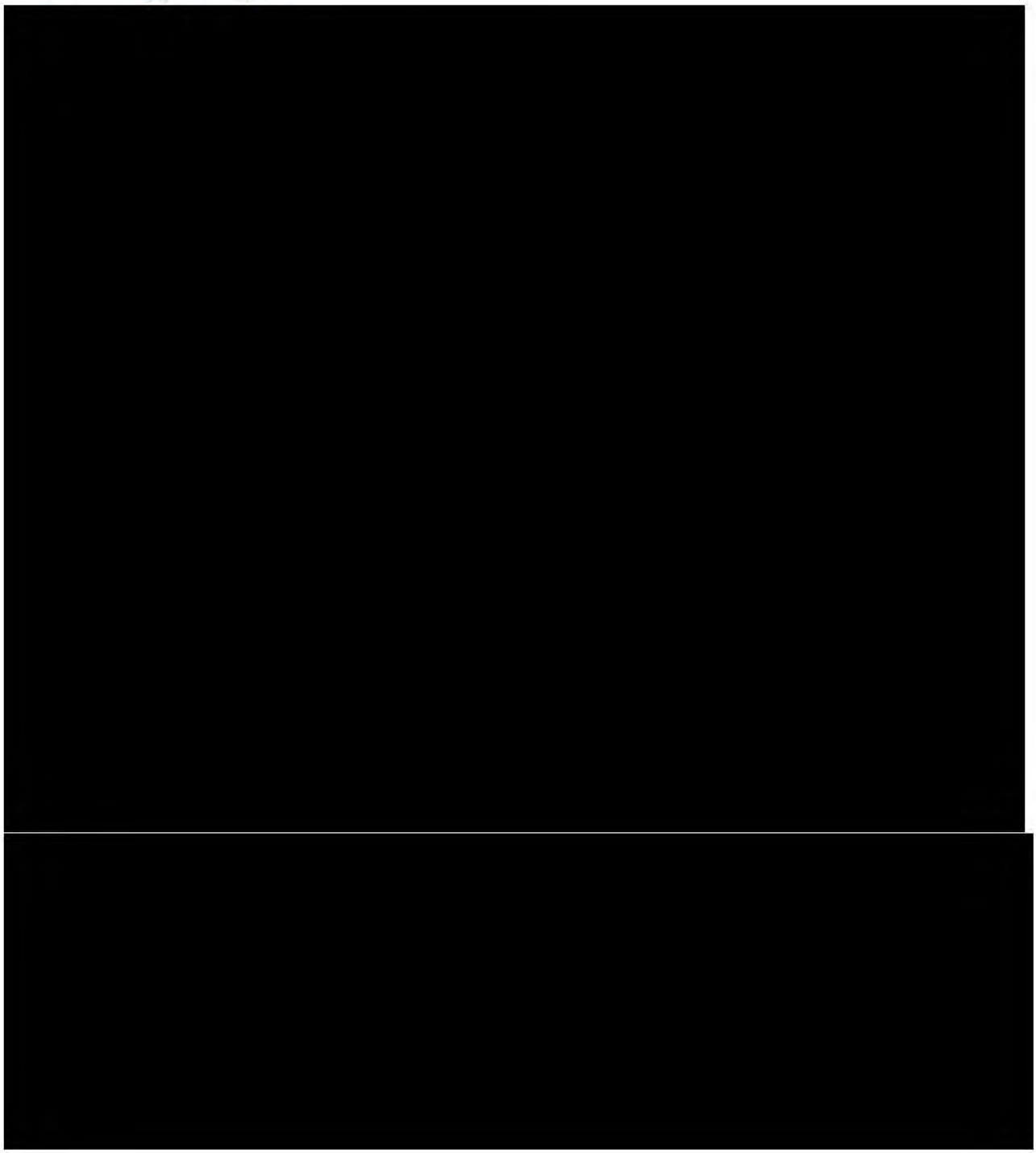
[redacted]

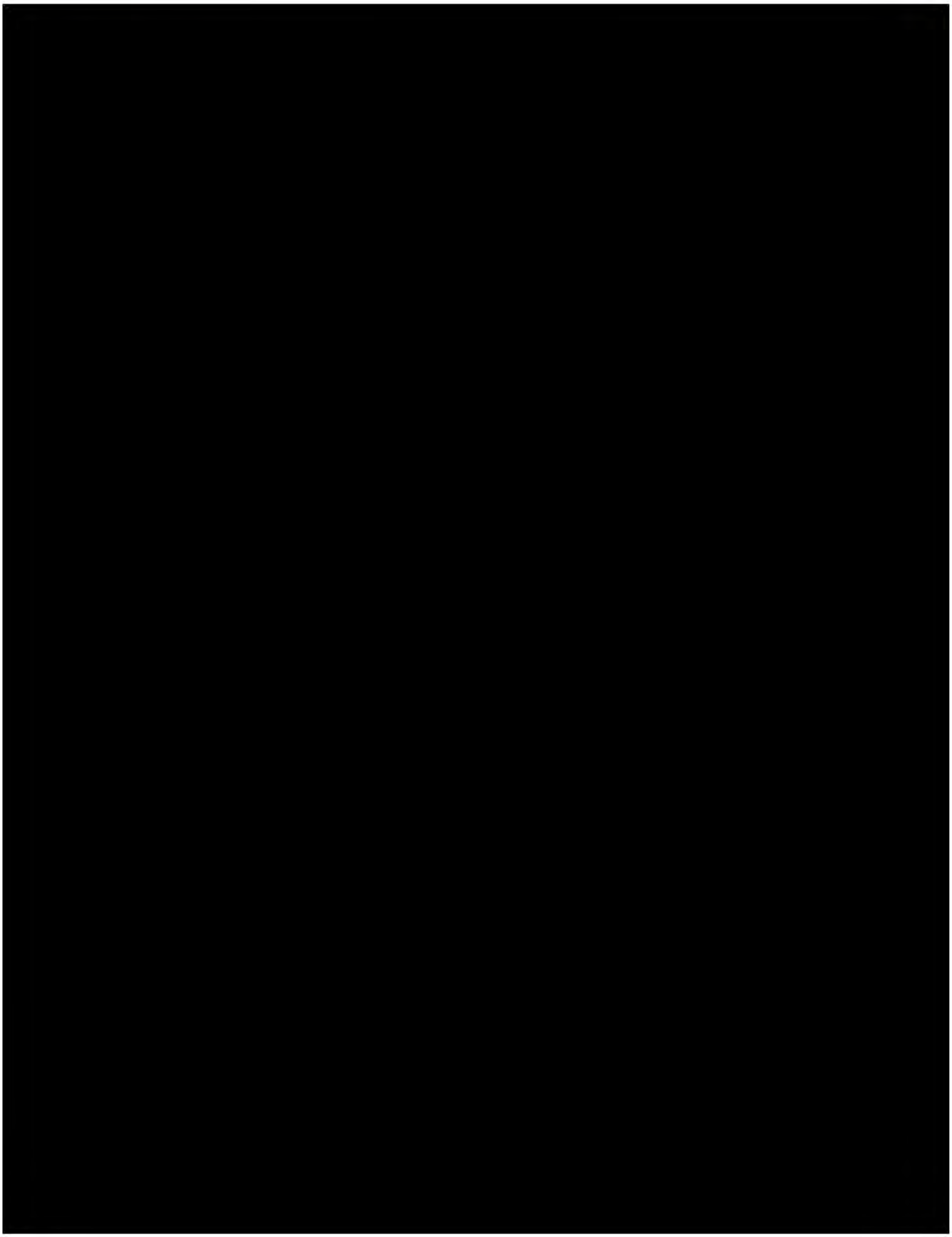
7.6 Financial benefit of [redacted]

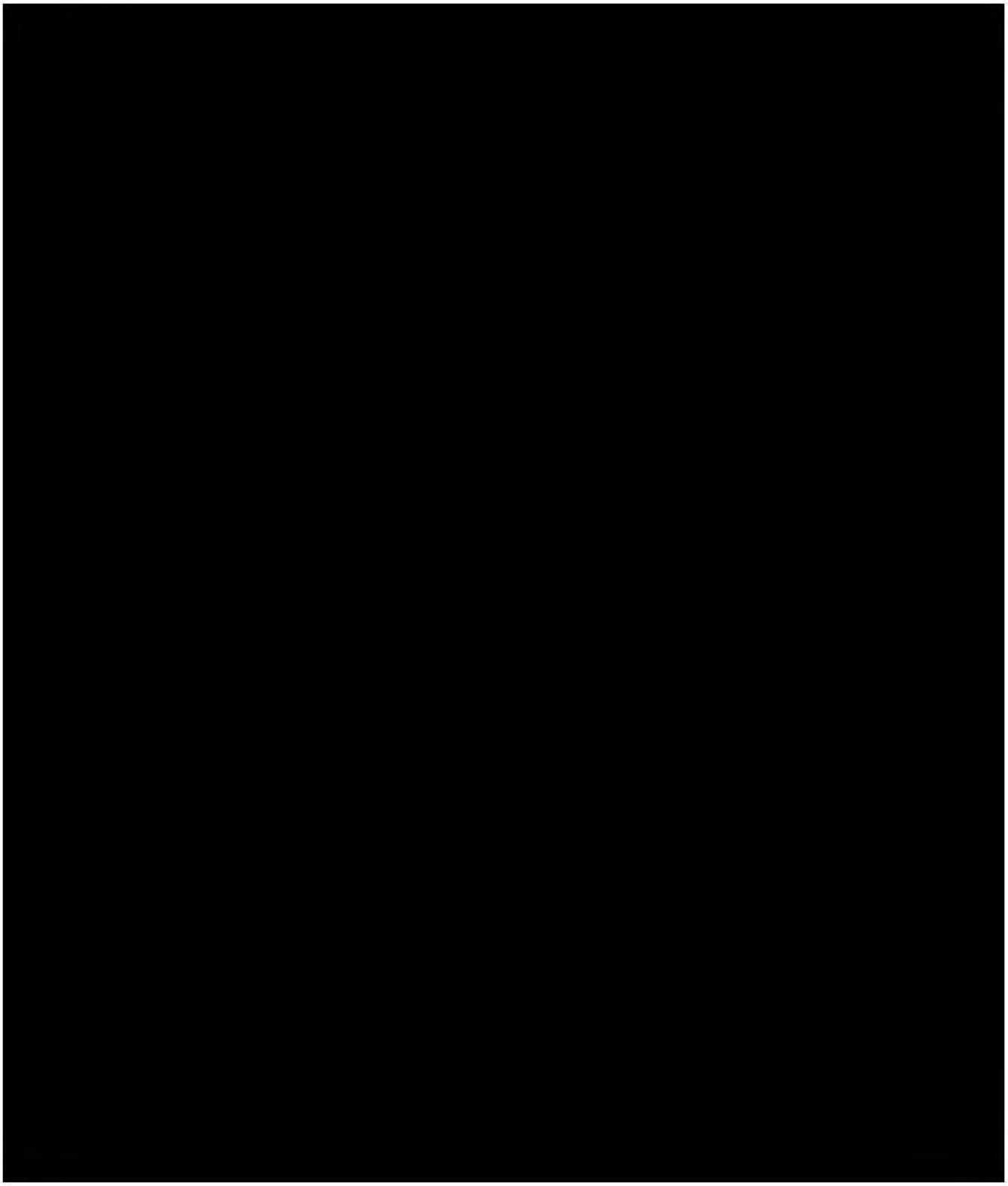
[redacted]

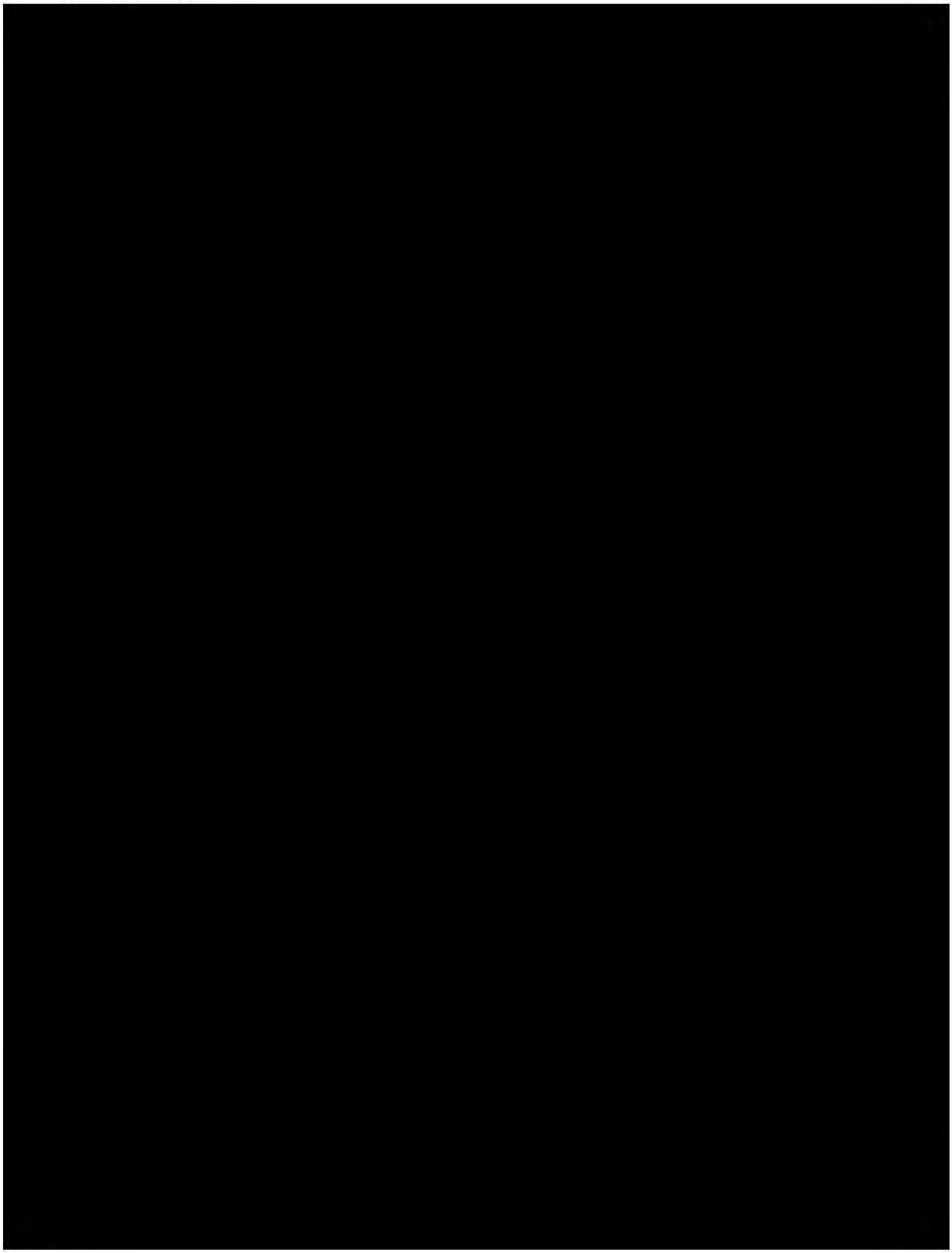
8 CONCEPT SHIPYARD LAYOUT

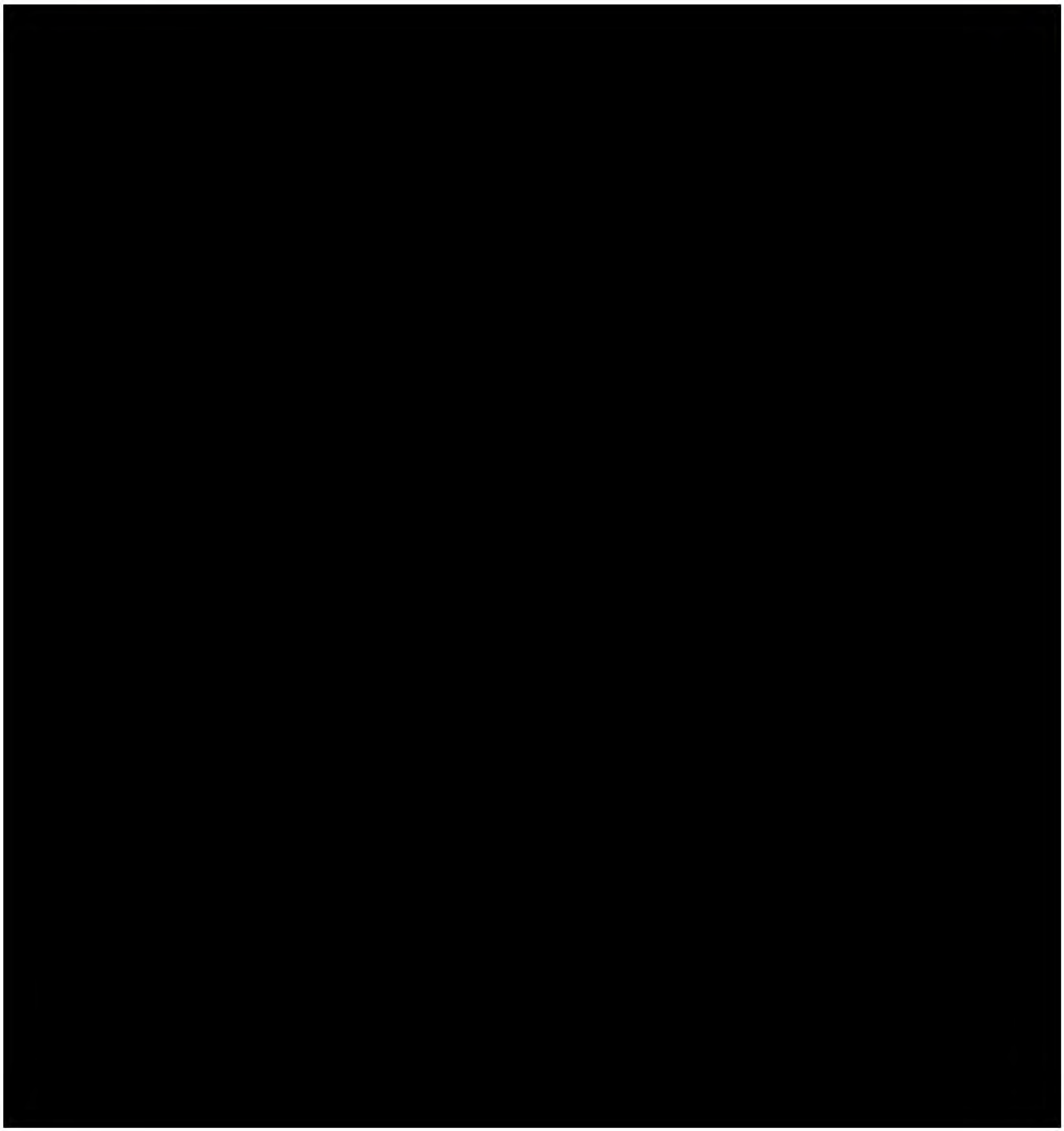
8.1 Shipyard layout

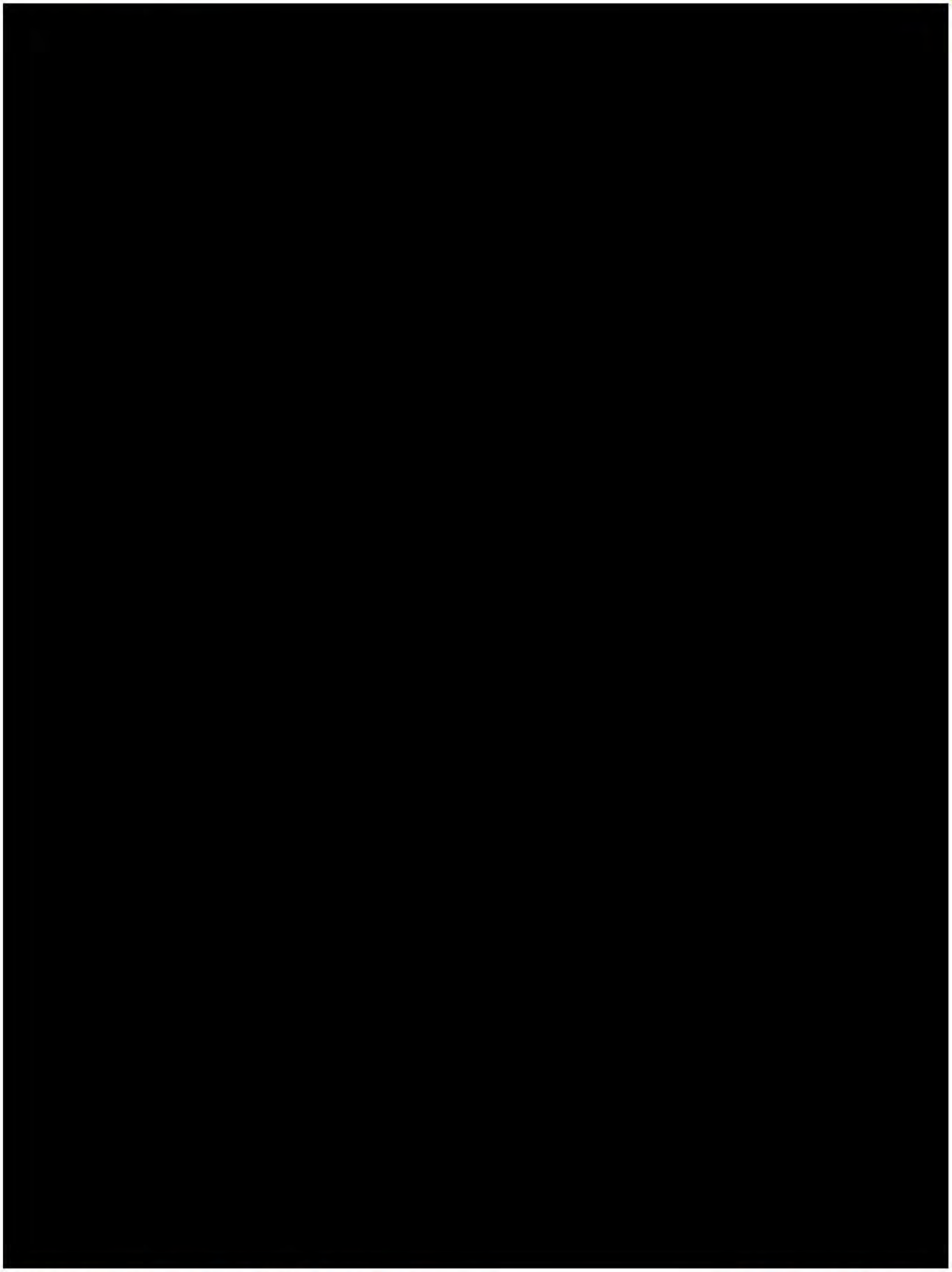


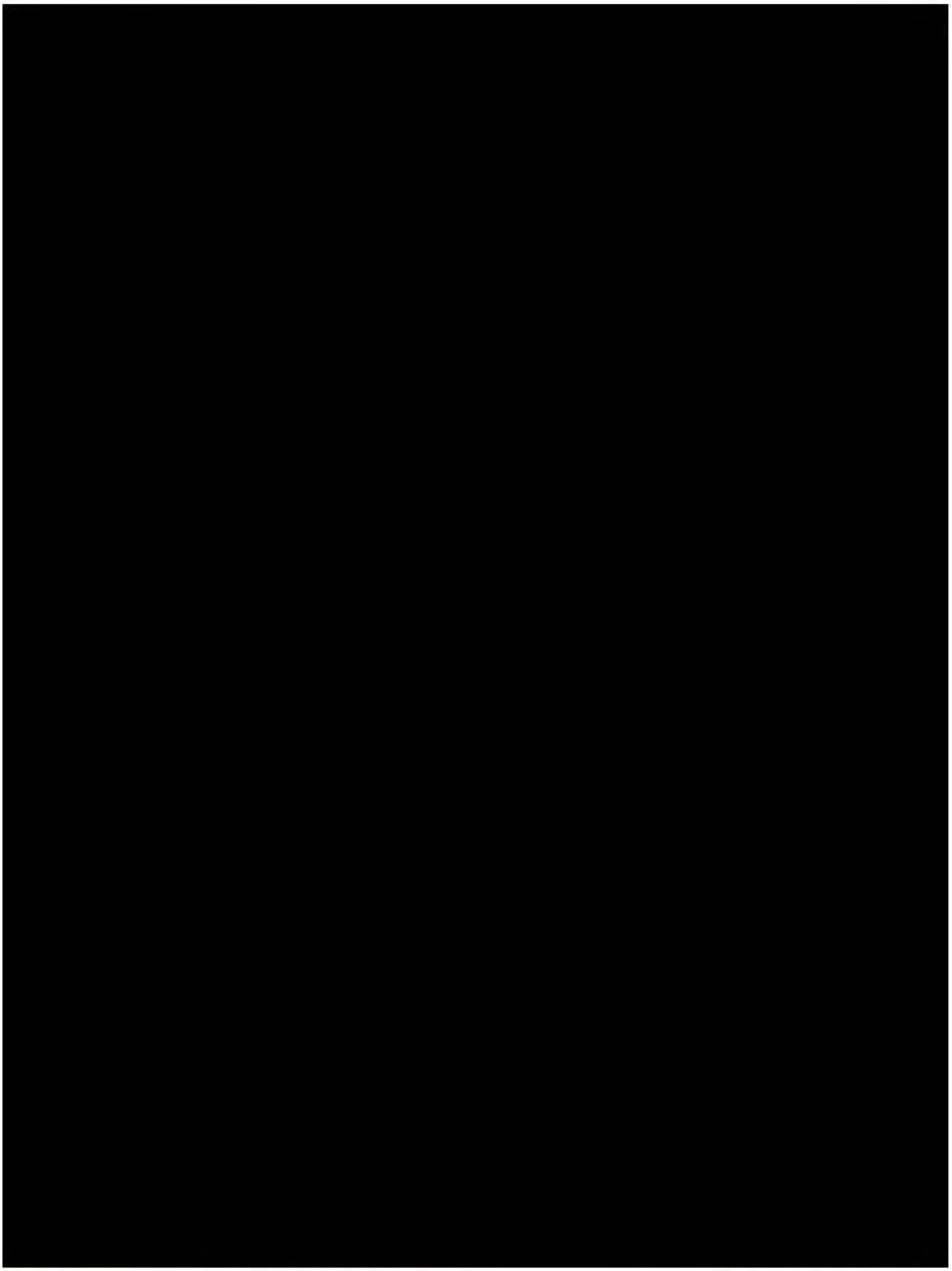












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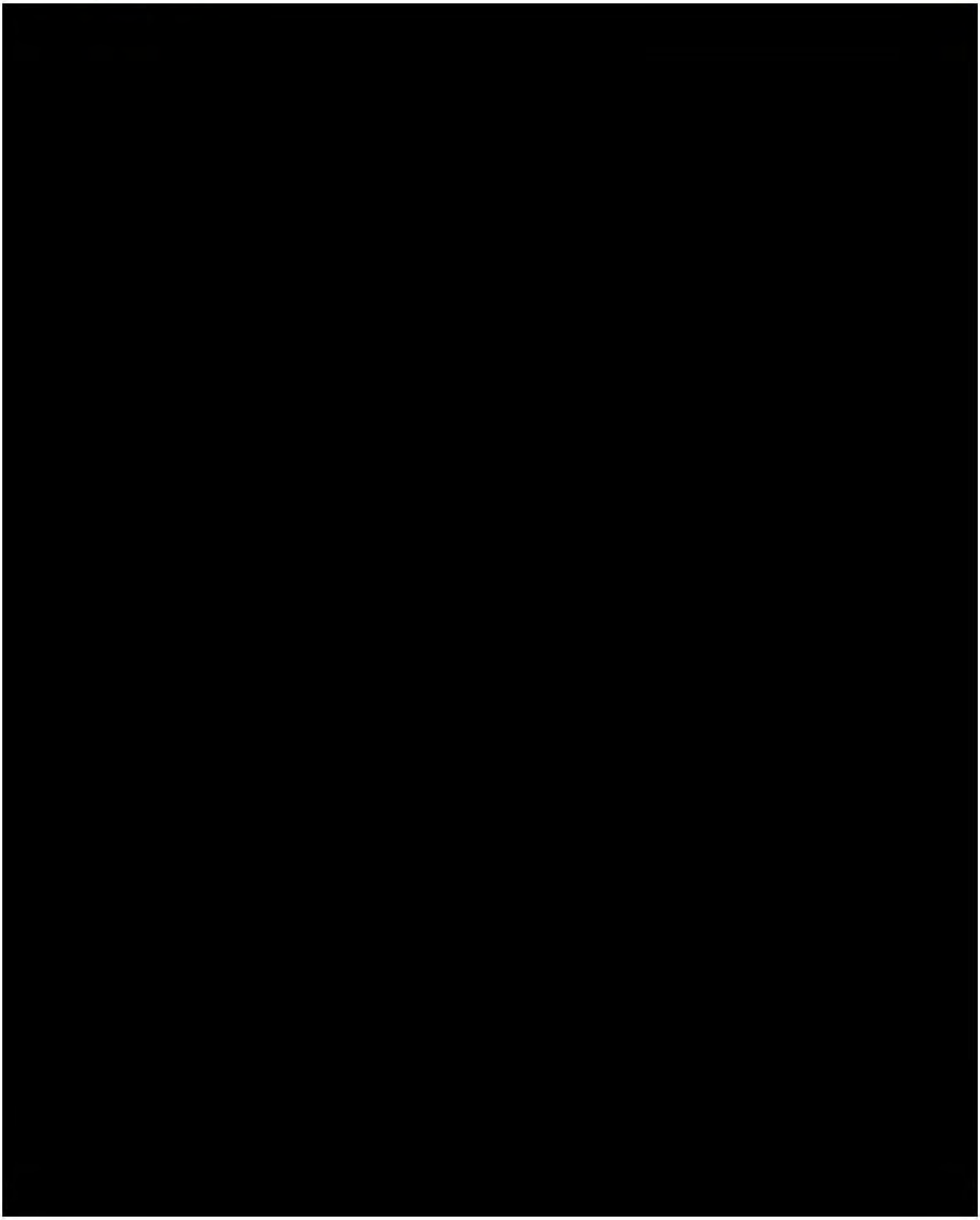
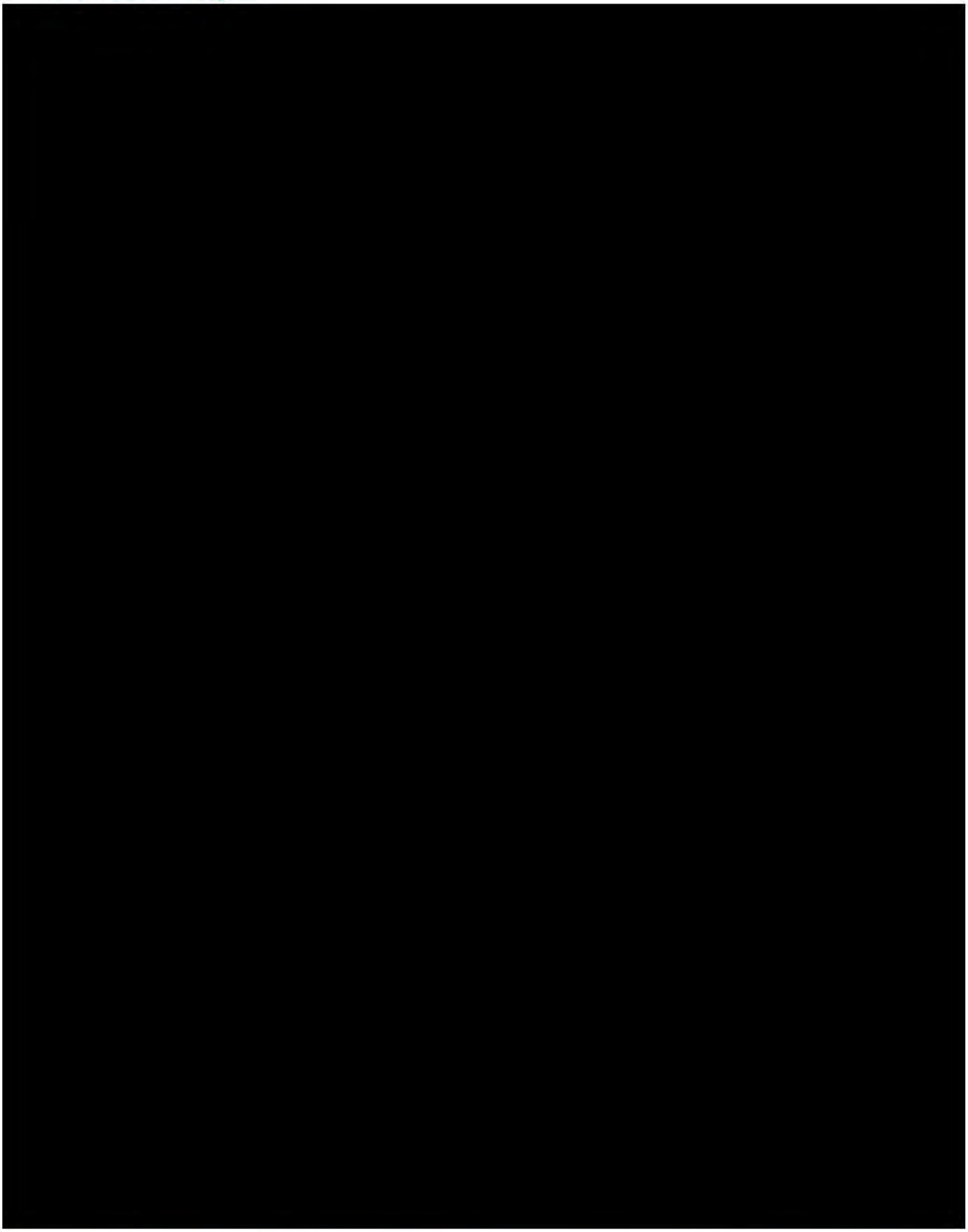
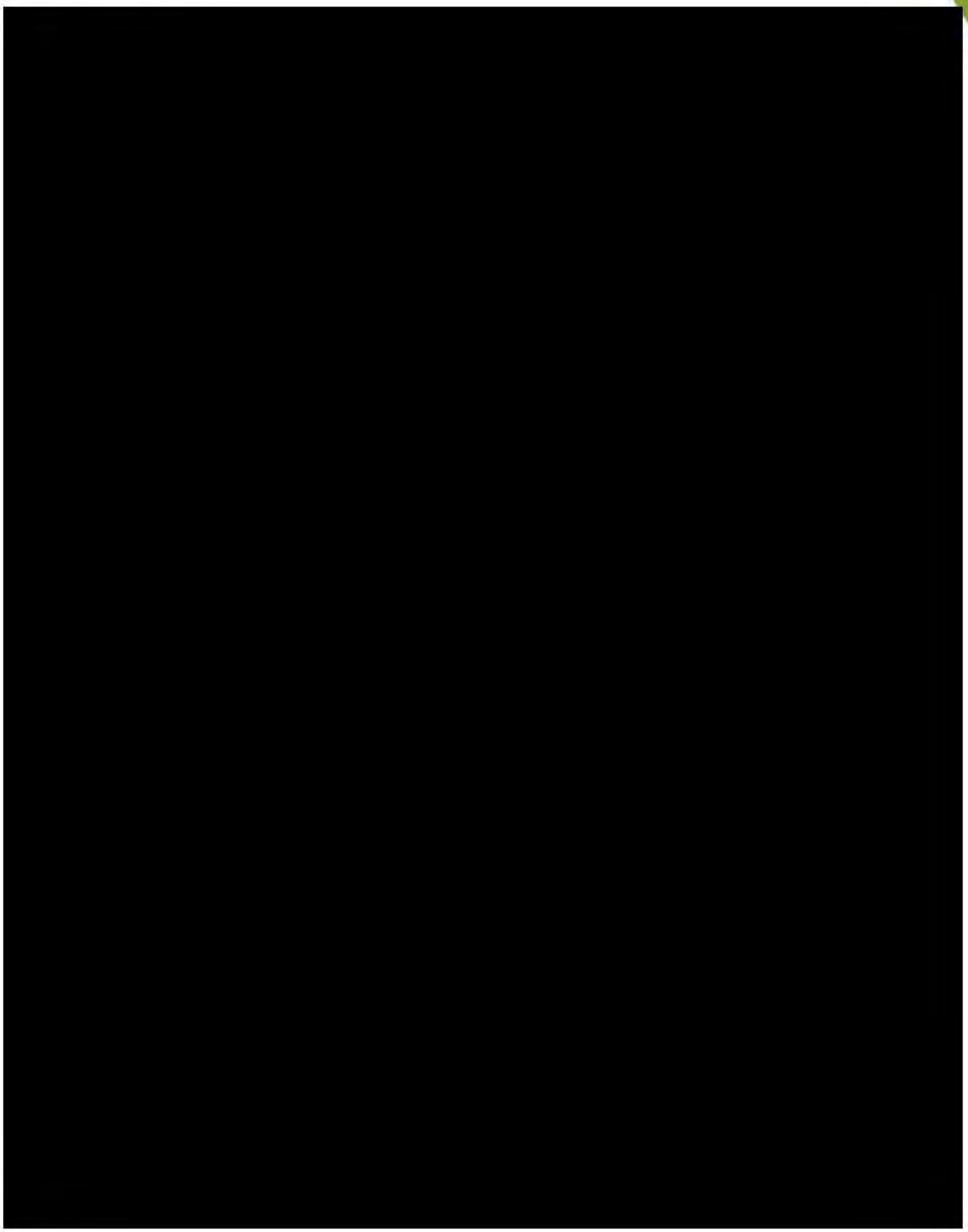
9 POTENTIAL IMPROVEMENT INITIATIVES

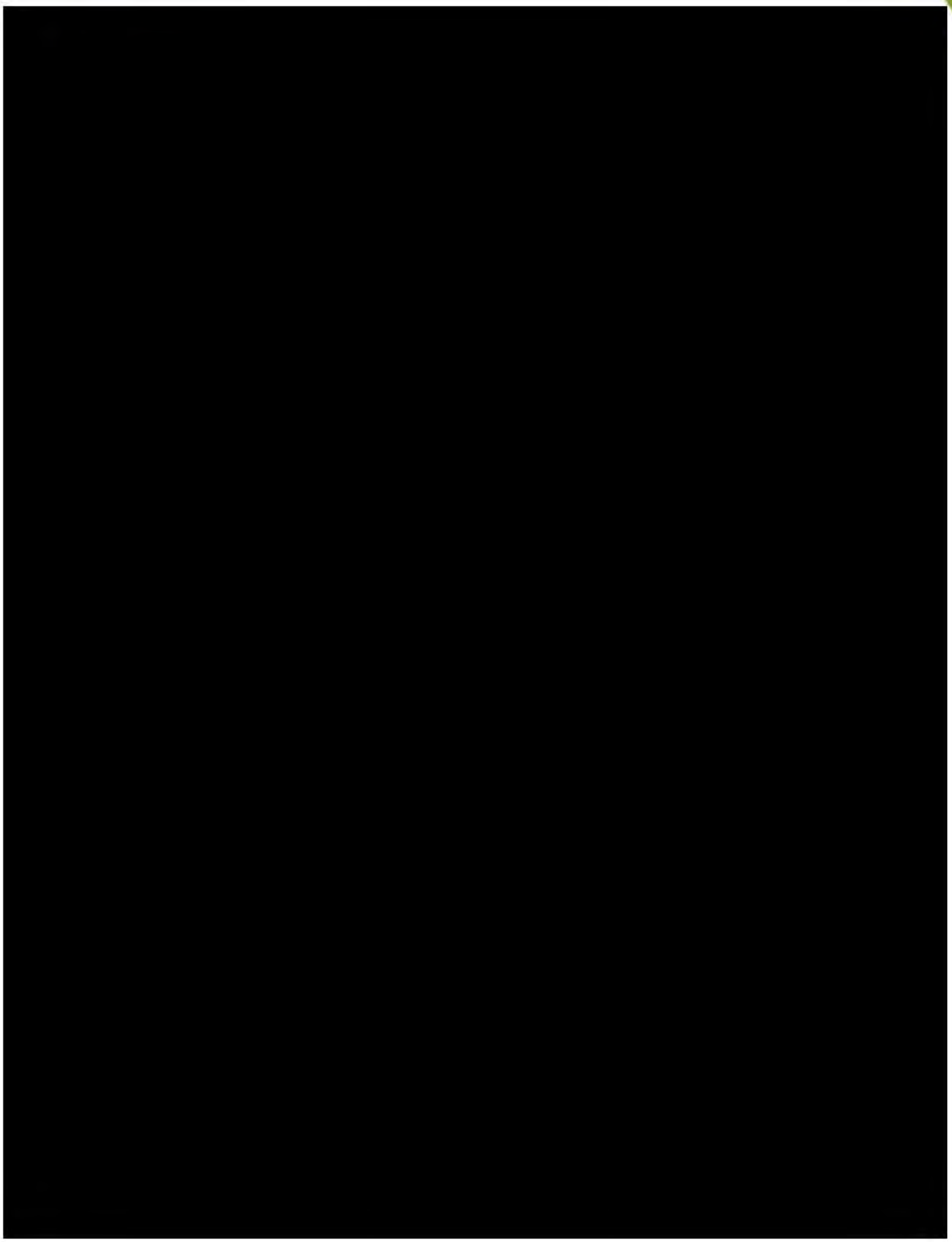
9.1 Introduction

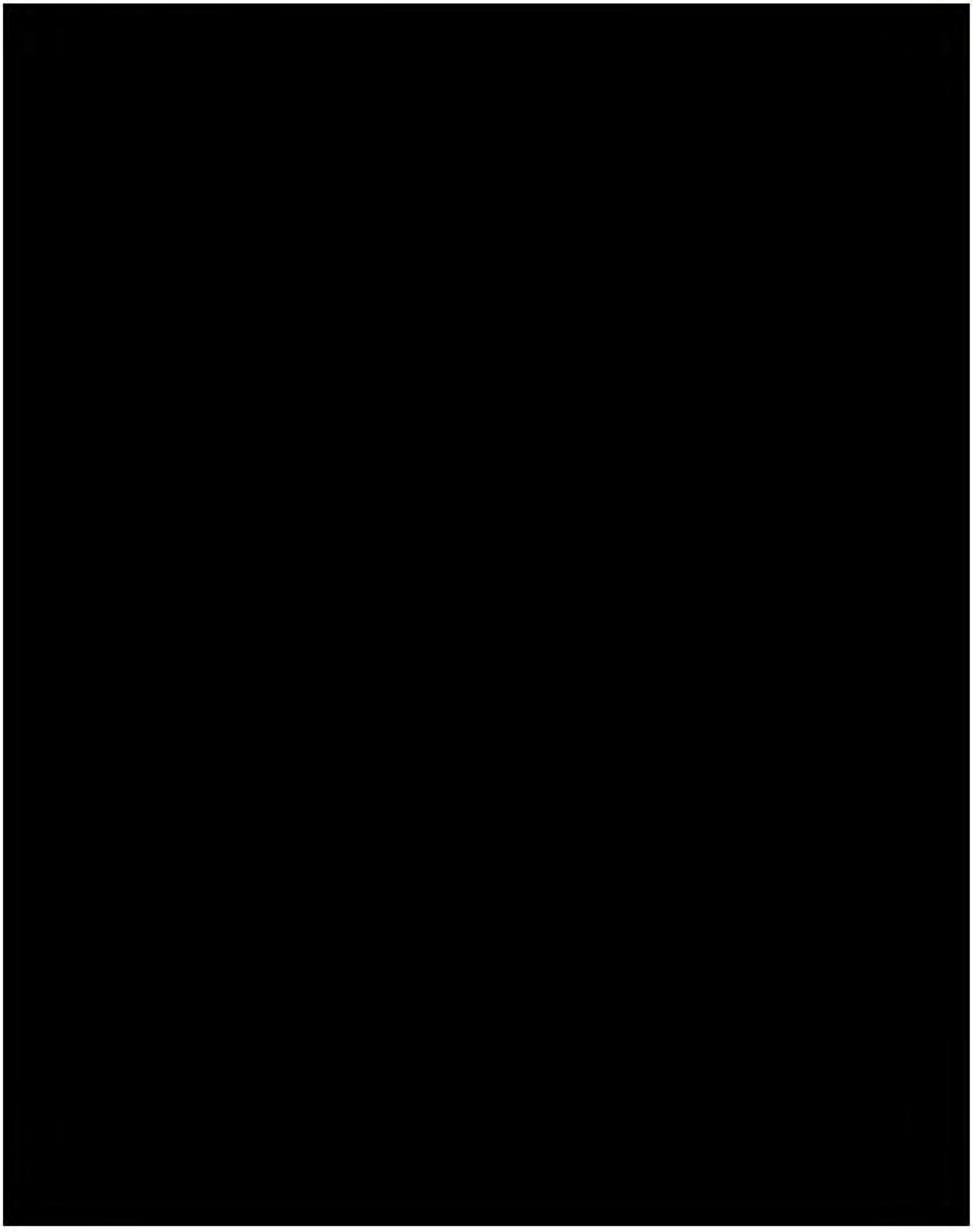


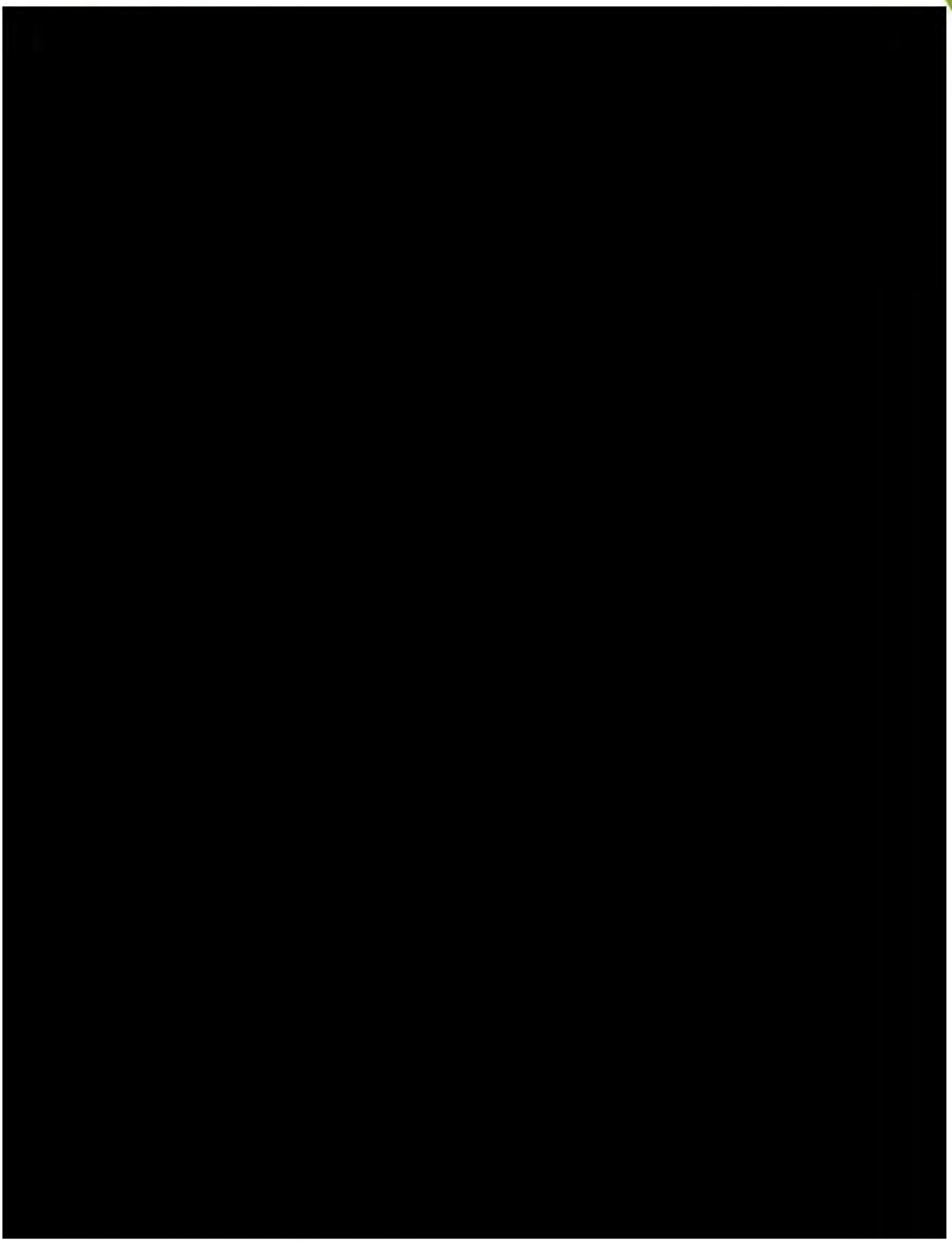
9.2 Business plan

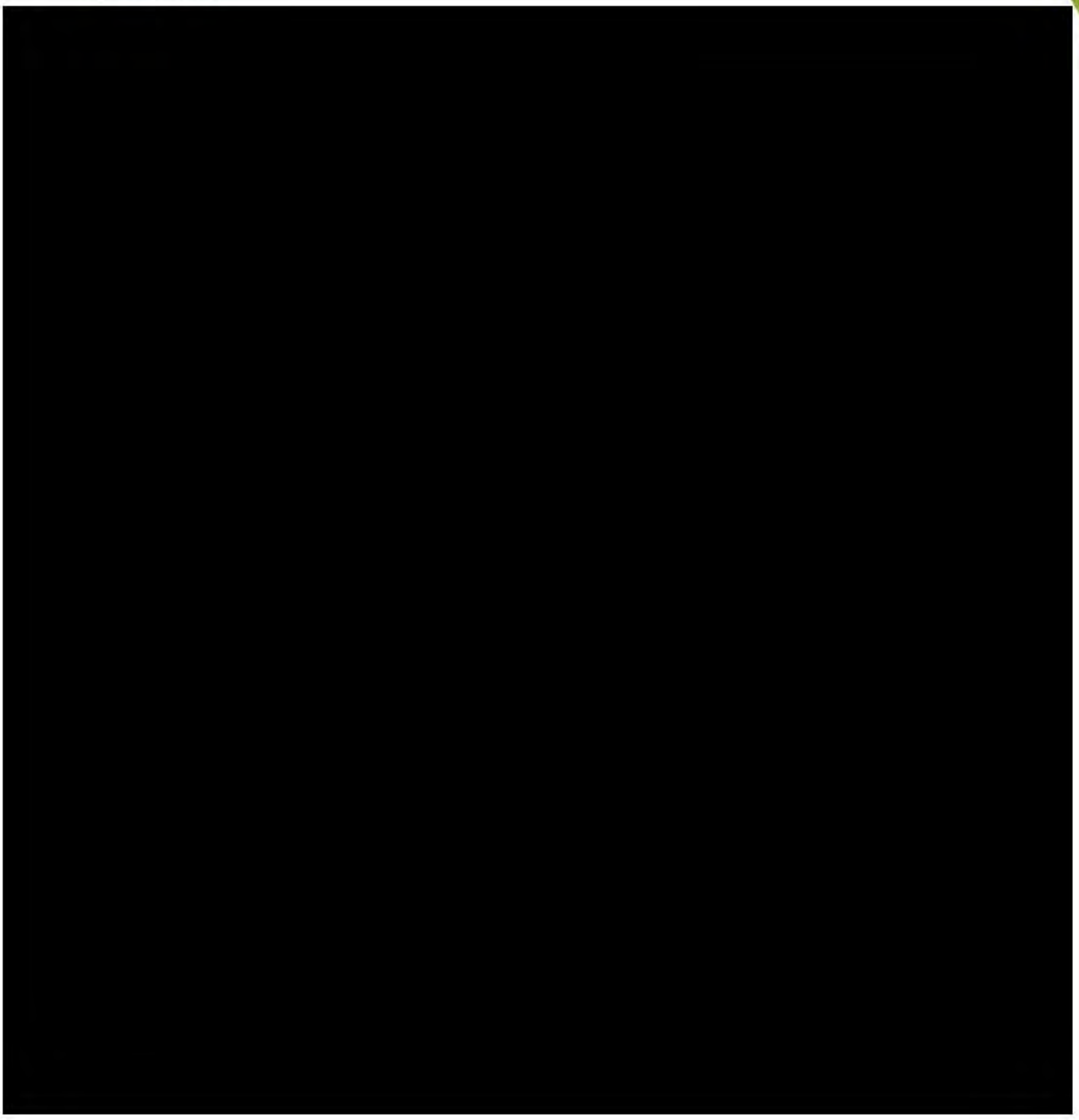


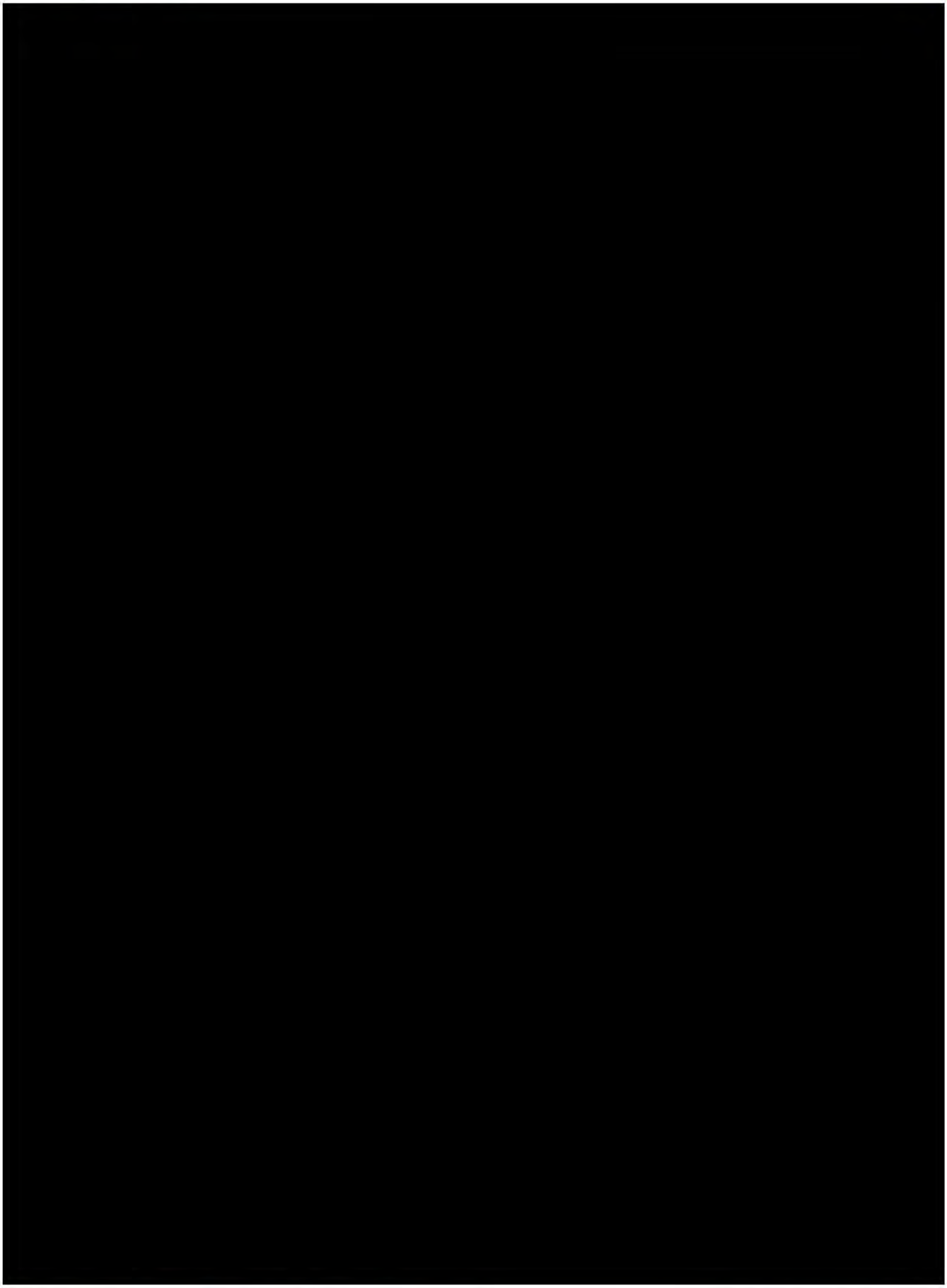


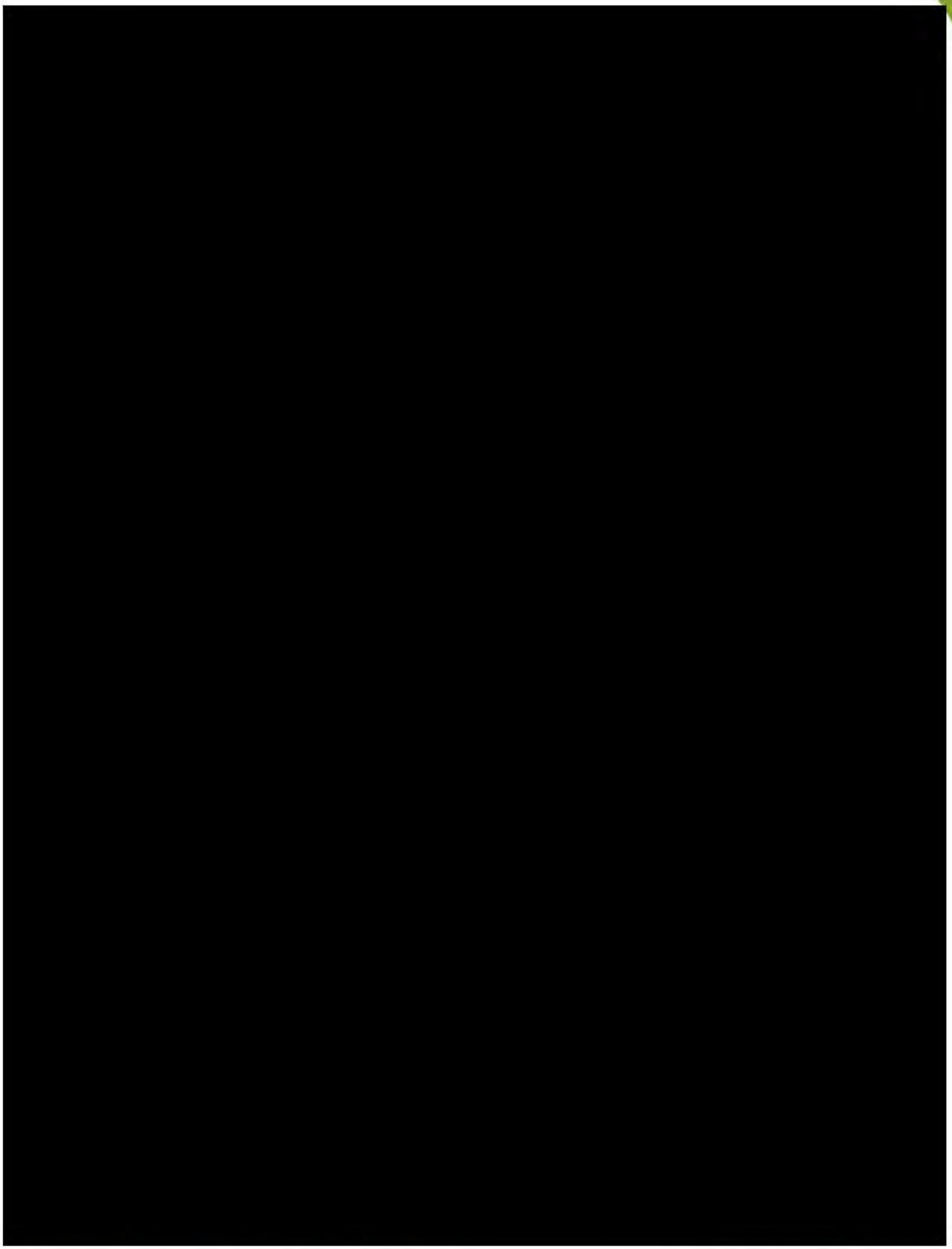


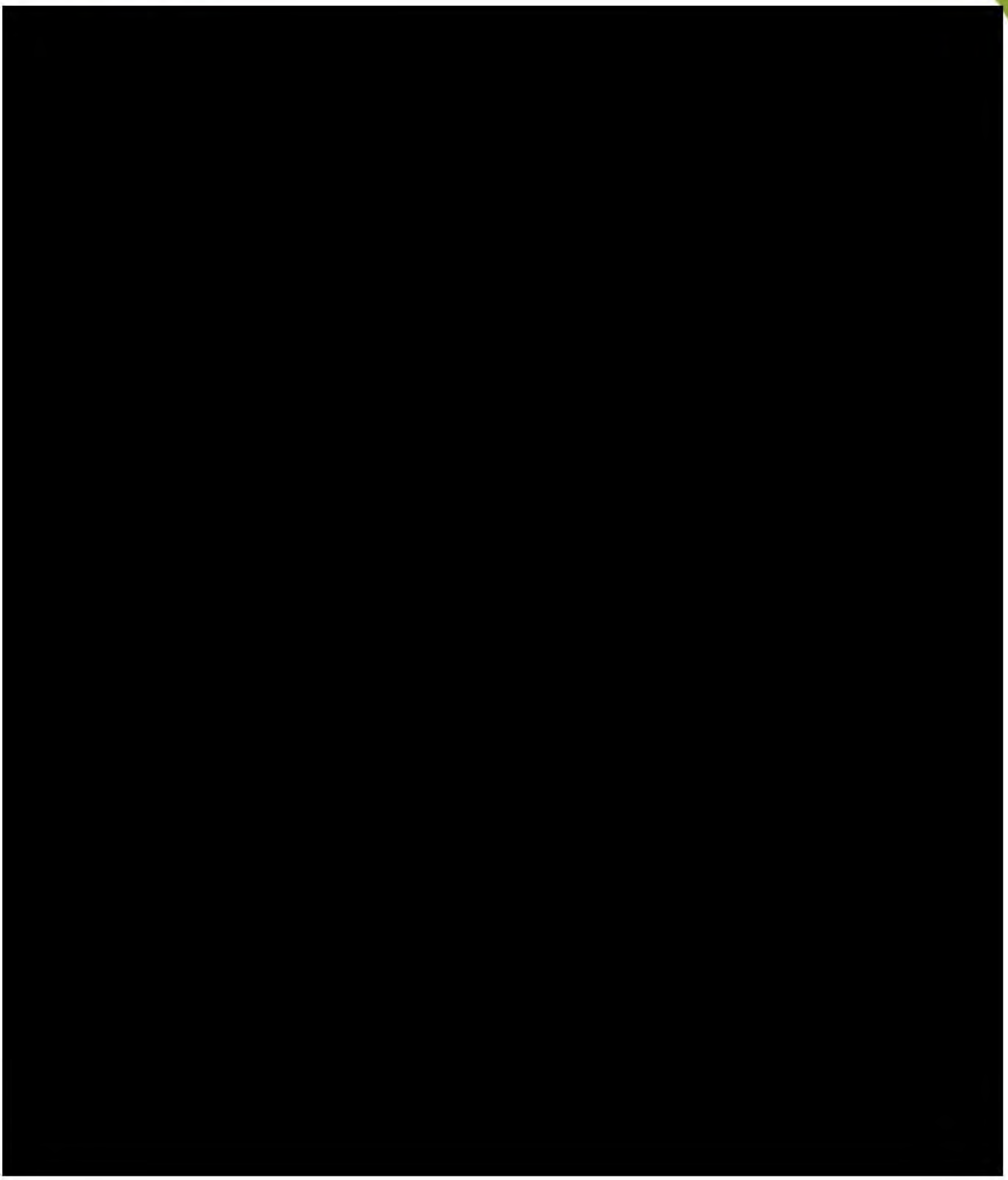


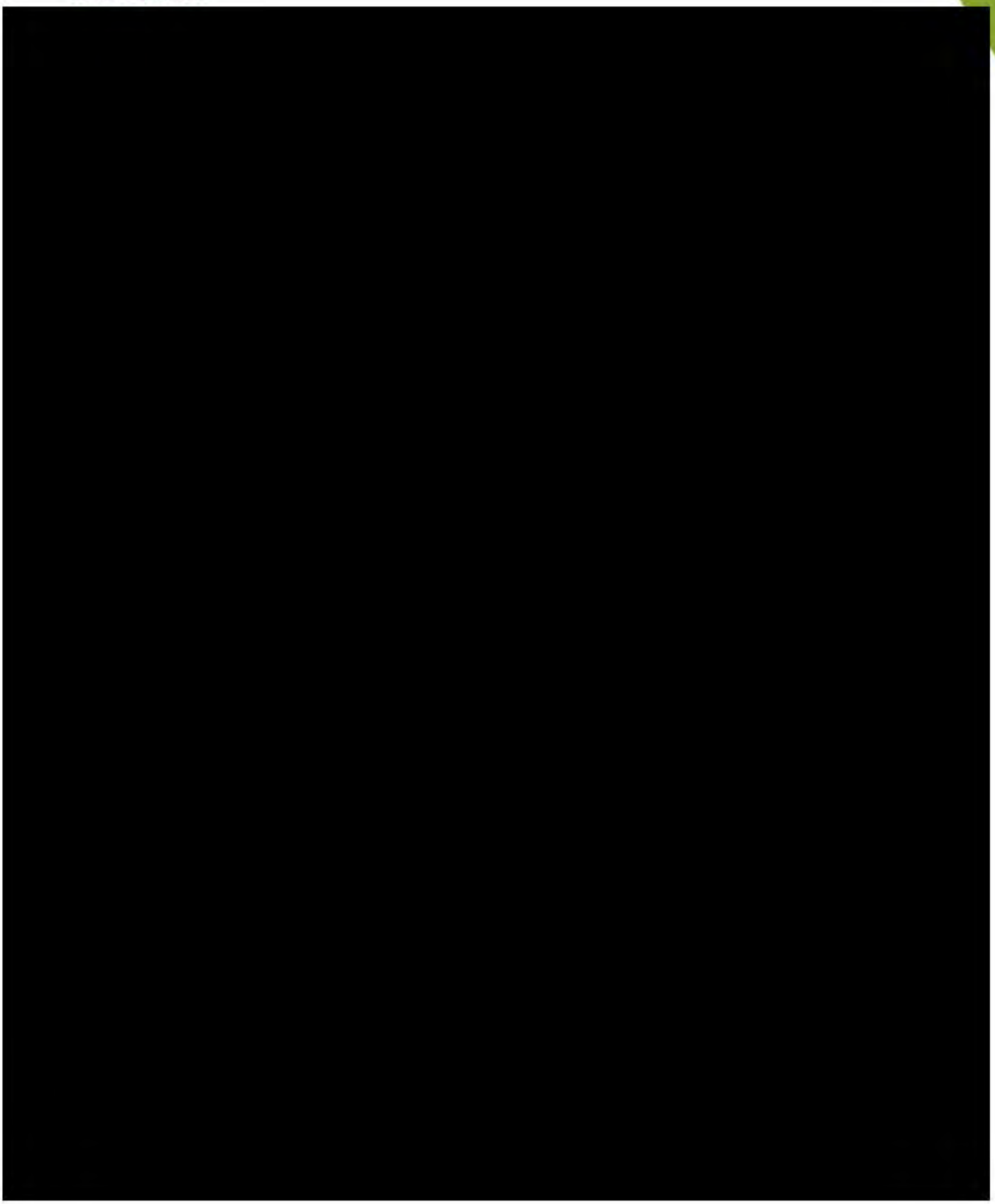


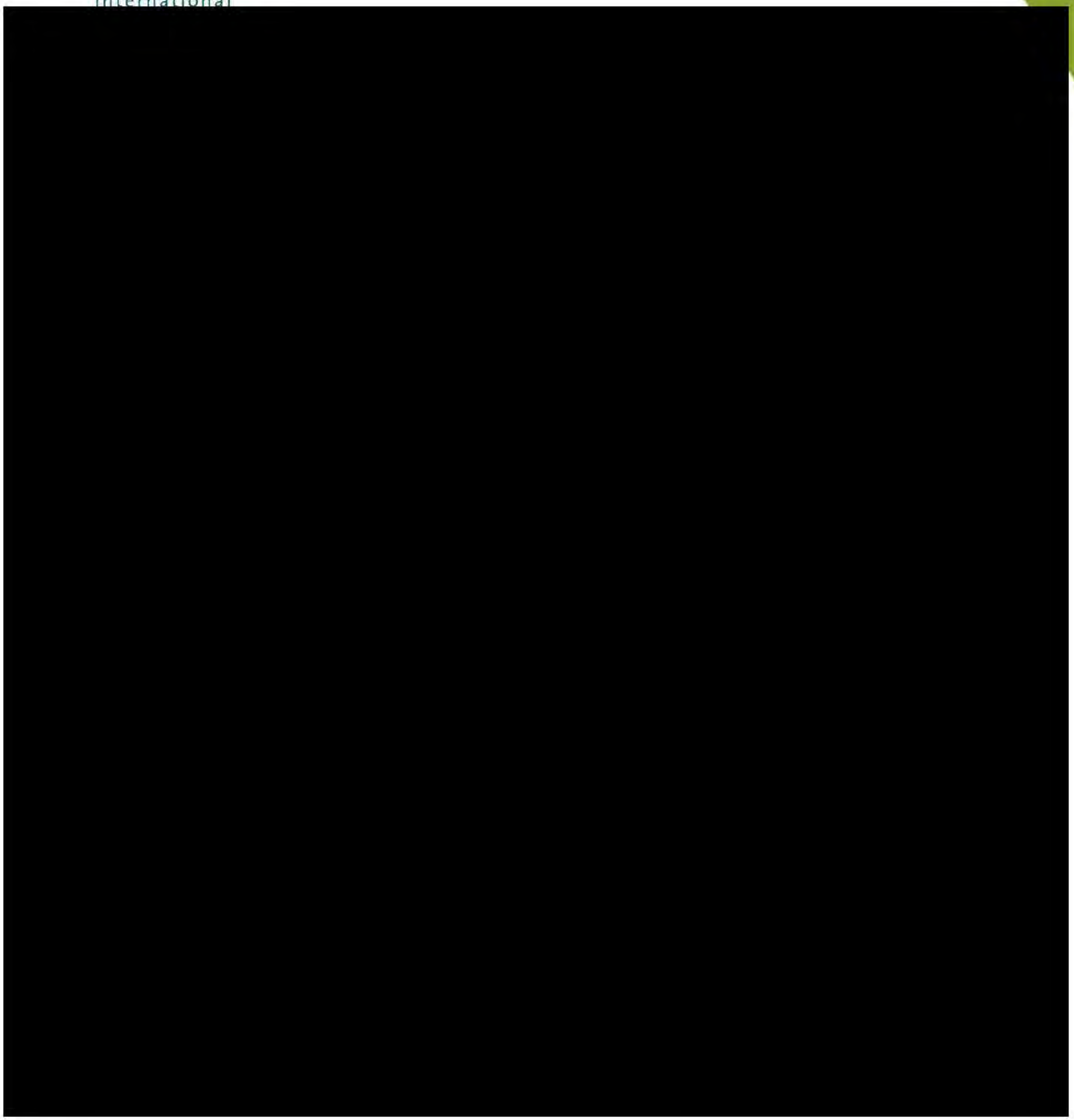




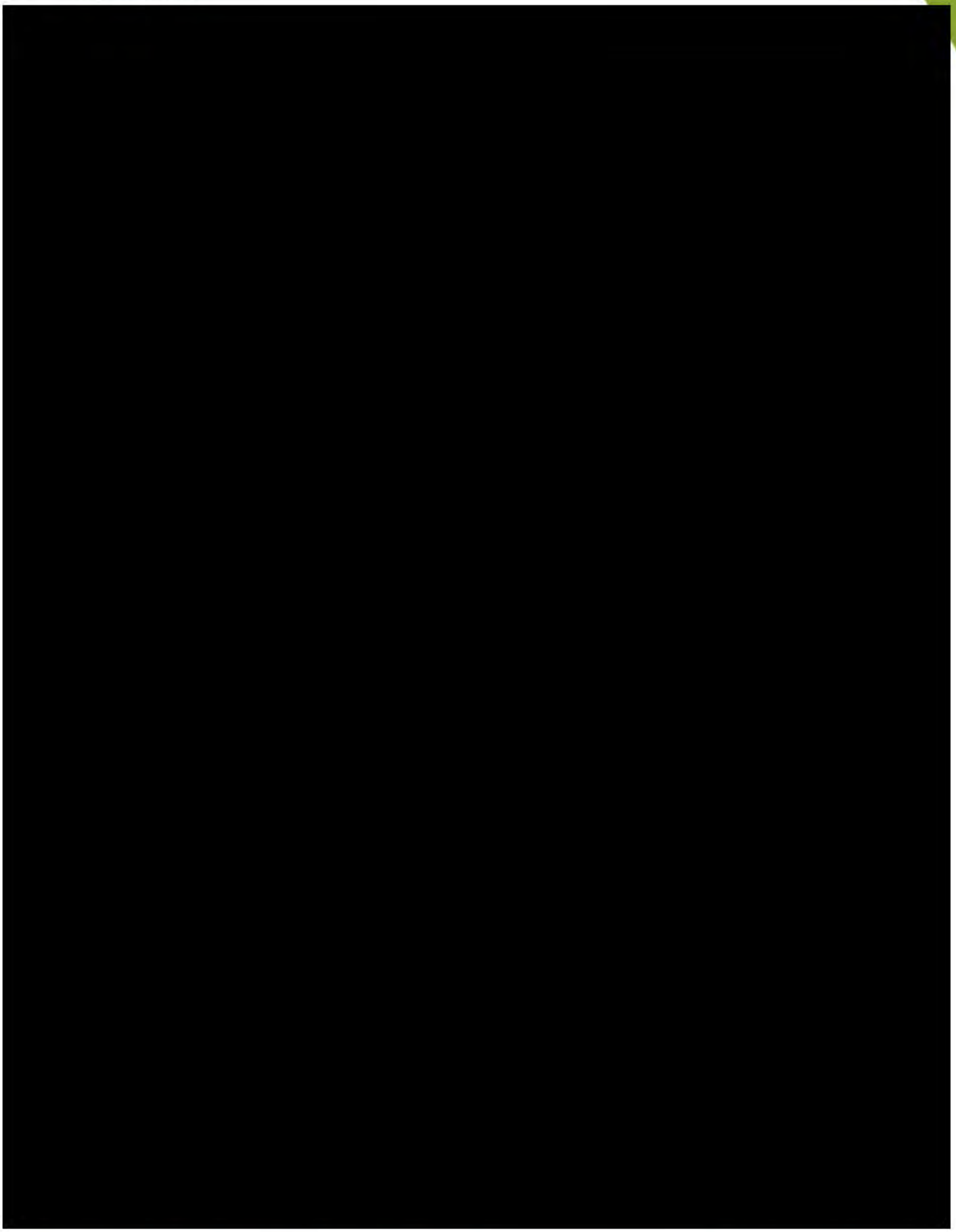


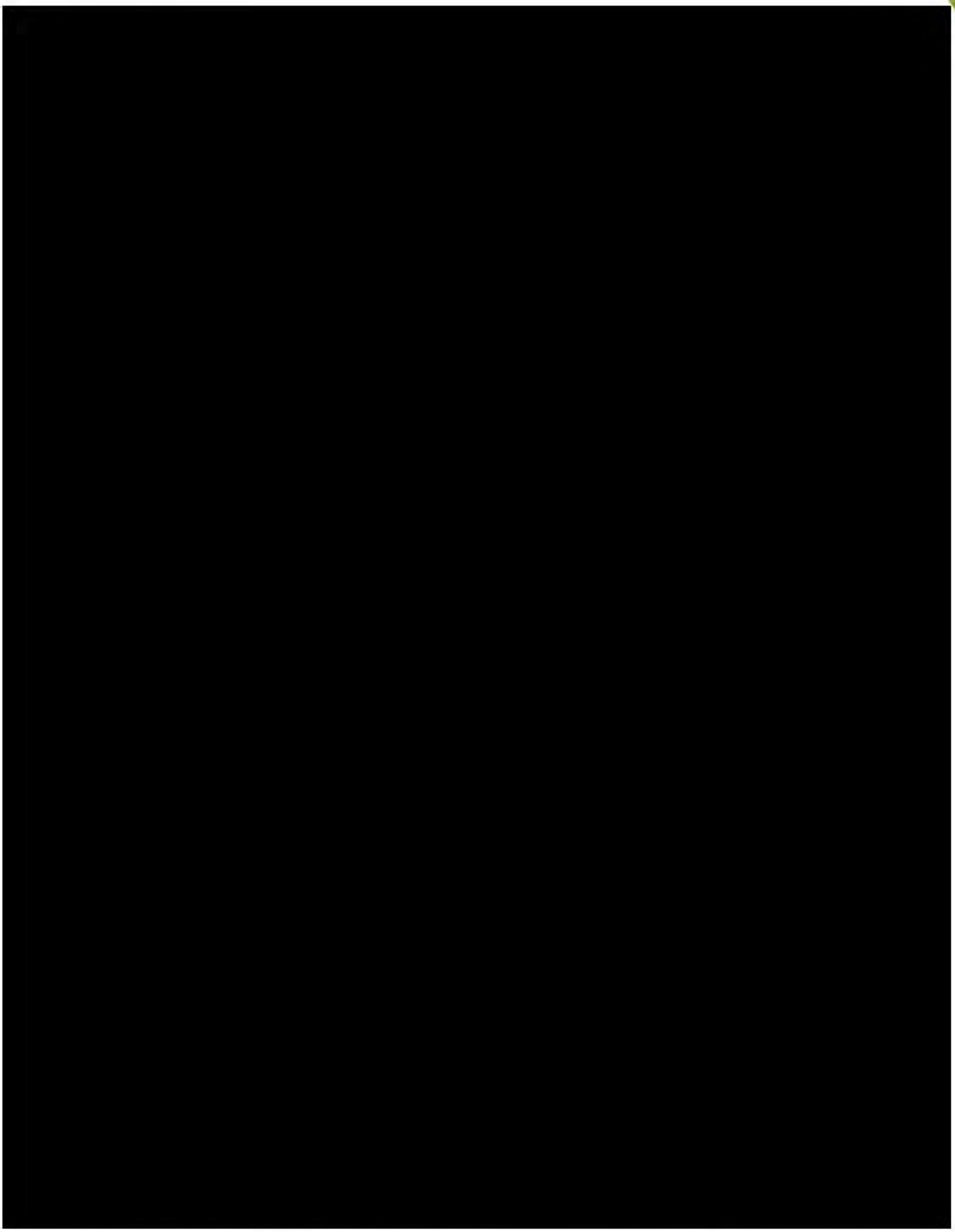


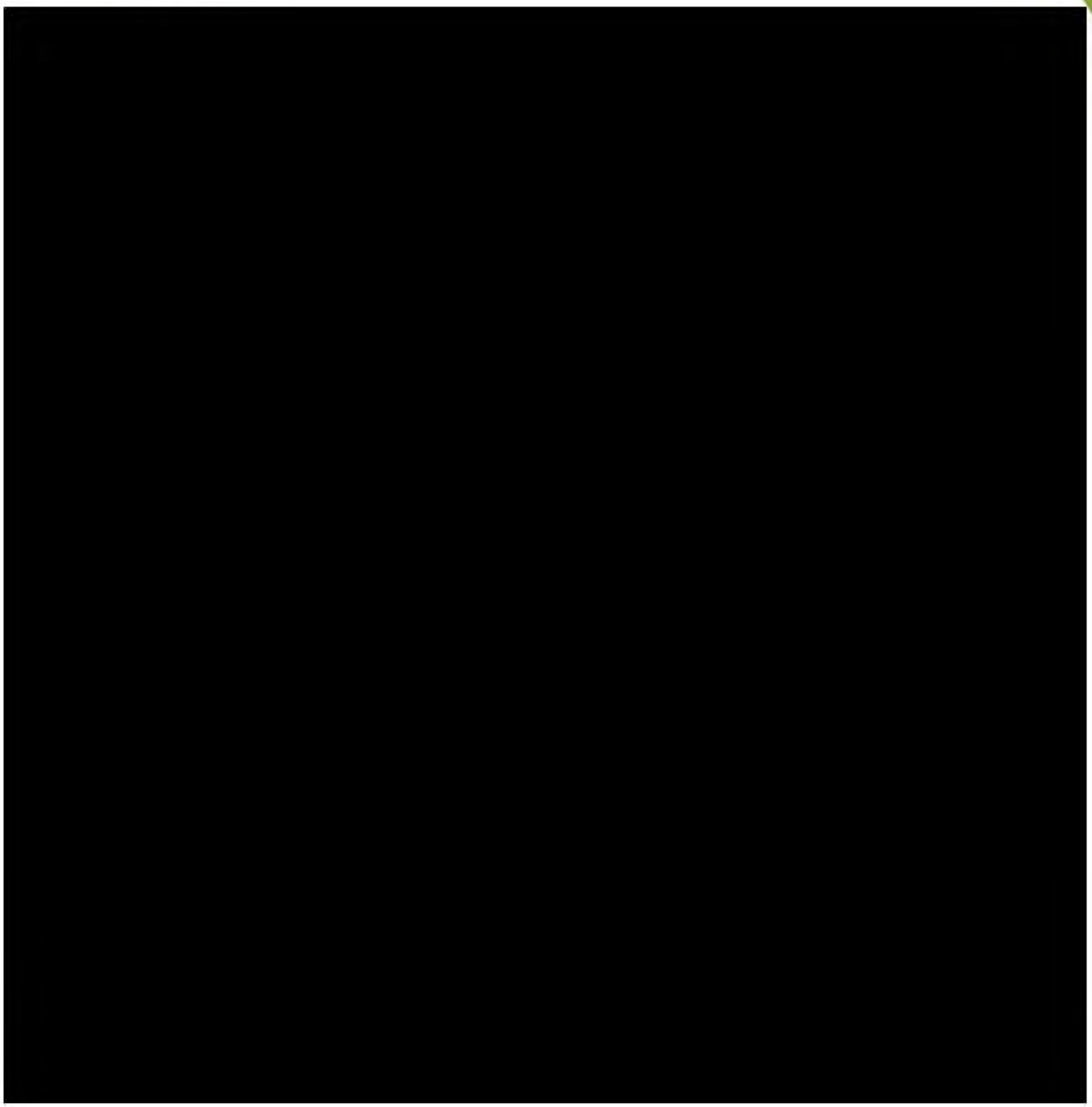


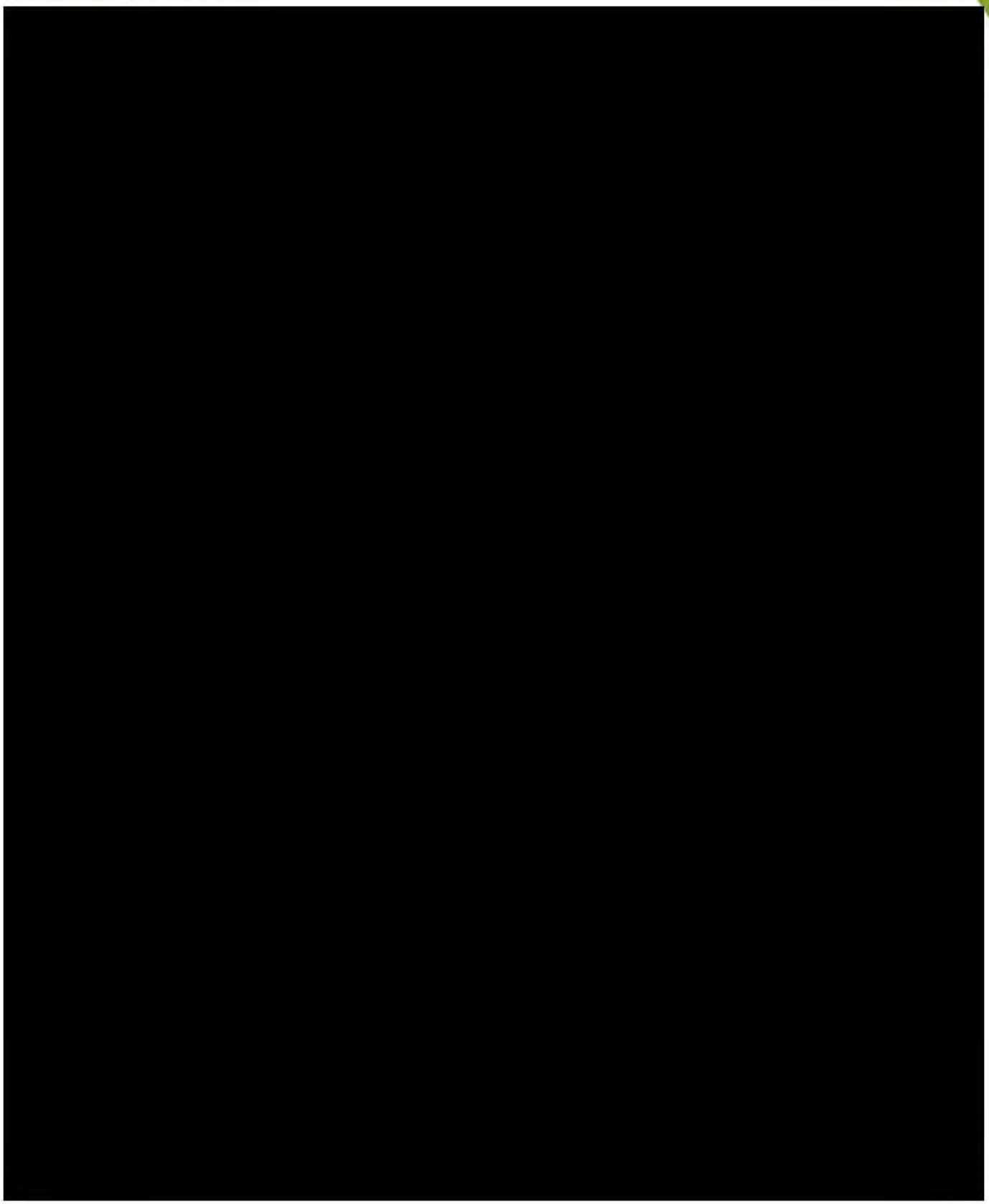


[5] It is understood that Total Station equipment has been procured.









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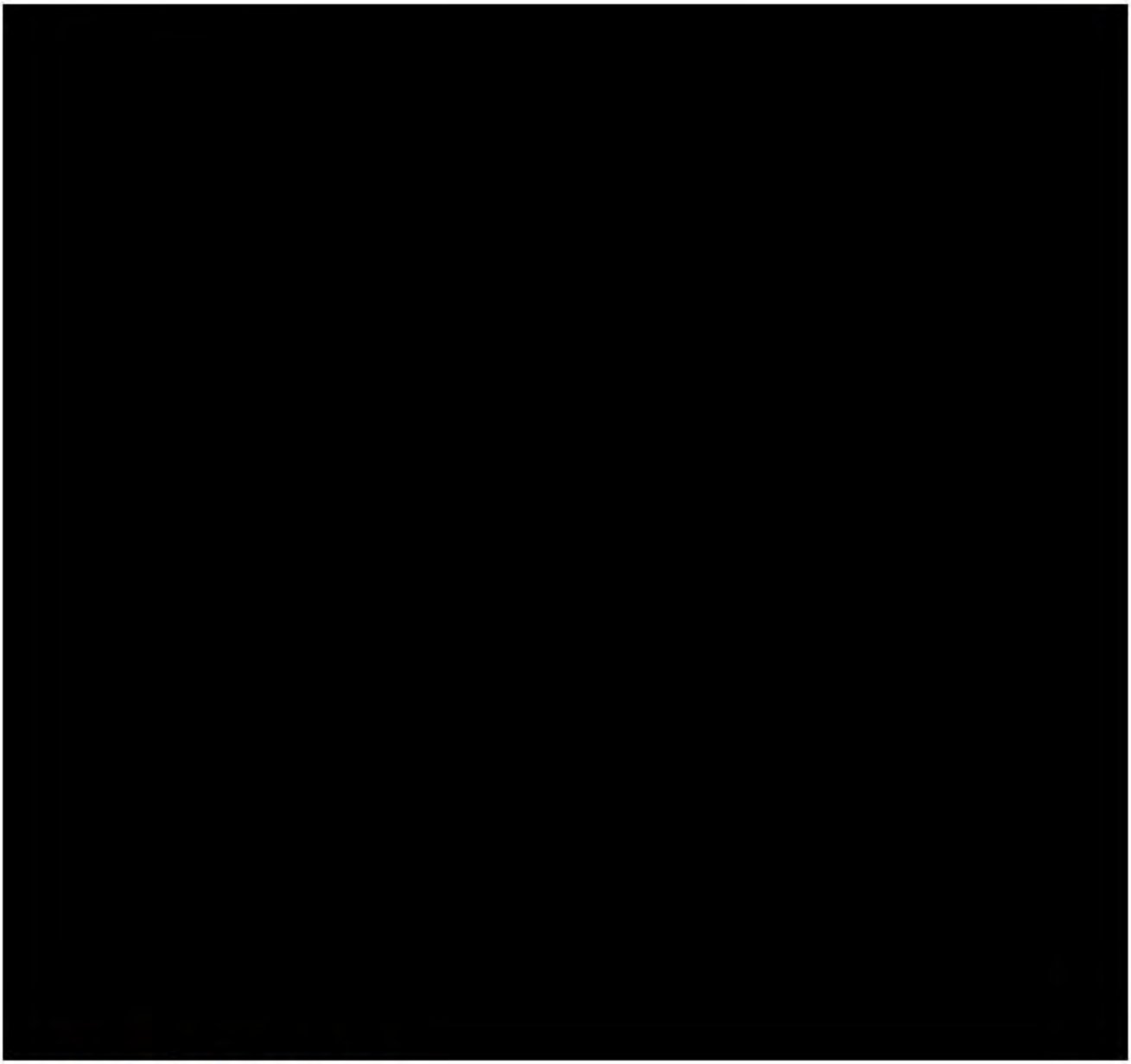
10 COST ESTIMATE AND PRIORITISATION ANALYSIS

10.1 Cost estimate

[redacted]

[redacted]



10.2 Monte Carlo analysis

[redacted]

10.3 Phasing of

[redacted]

[redacted]

10.4 Return on investment

[redacted]

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Checked by:	
Date/initials check:	
Approved by:	
Date/initials approval:	

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[redacted]

Economic Impact Assessment - DRAFT

Prepared for: *Scottish Government Rapid Response Unit*

Updated – February 2023

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Contents

Figure 1: Structure for this document

Introduction

Introduction to Teneo

Teneo works with the CEOs and leaders of the world's leading companies and institutions, providing strategic counsel across their full range of key objectives and issues.

Teneo has extensive experience in economic forecasting and scenario modelling, working directly with the world's largest brands and institutions to understand how geopolitical, macroeconomic, and behavioural factors influence economies and demand for products and services.

Teneo utilises a combination of technical modelling and highly respected advisers across a range of subjects, including politics, economics, and consumer brands, in order to develop economic scenarios and assessments.

Important notice

We enclose our Economic Impact Assessment (the "report") on Ferguson Marine (Port Glasgow) Limited ("the Company" or "FMPG") which has been prepared for the sole purpose of assisting and advising Scottish Government in accordance with our contract award letter dated 17th January 2023.

This report considers, where possible, the potential impact of the Russian invasion of Ukraine on the Company. However, the situation is continuing to evolve, and many uncertainties remain as to the effect the ongoing conflict in Ukraine and the various associated sanctions regimes will have on the Company and the broader domestic and global economies. Accordingly, it is not possible for our work to identify and quantify the impact of all related uncertainties and implications. Changes to market conditions could substantially affect the Company and our work. We have not updated our work for any subsequent information or events.

This report is confidential to the addressees and prepared solely for the purpose(s) set out in our engagement letter [and addendum letter, as previously noted]. You should not refer to or use our name or the report for any other purpose, disclose them or refer to them in any other document, or make them available or communicate them to any other party. No other party is entitled to rely on our report for any purpose whatsoever and we accept no duty of care or liability to any other party who is shown or gains access to this report.

We draw your attention to the scope and basis of our work in Appendix D.

Executive Summary

The Scottish Government has commissioned Teneo to perform an Economic Impact Assessment to understand the current economic value Ferguson Marine (Port Glasgow) contributes to the Scottish economy and how this would change if certain input assumptions were to change.

The current role of the shipyard in building Hull 801 and 802 (the 'current state') is not representative of what a future operation of the yard will look like. Therefore, this assessment compares the difference in economic impact of the future state of the yard (the 'base case') after the completion of 801 and 802, against two proposed futures for the yard ('scenarios'). To do this, we first need to understand the current output, then look at the base position. This approach is detailed in Figure 2.

Figure 2: Approach

For the current state and base case, economic output generated by the shipyard is measured as Gross Value Added (GVA), the measure of the value of goods and services produced by the shipyard. This is made up of direct (effects of the direct economic activity created by FMPG as a company), upstream (impacts of the supply chain of FMPG) and downstream (impacts as a result of production at FMPG in the local economy). Furthermore, indirect (effects as a result of business to business activity in Scotland) and induced (effects as a result of increased household income being spent in the Scottish economy) impacts are considered. For the two scenarios assessed, the net economic impact is measured as the loss in GVA **compared to the base case** in the third year post the scenario taking effect.

A summary of the base case and the net economic impact of moving to scenarios 1 and 2 are shown in Figure 3.

Figure 3: Net economic impact of scenarios 1 and 2 against the base case

[1]This is the net economic impact in the third-year post implementation of the scenario.

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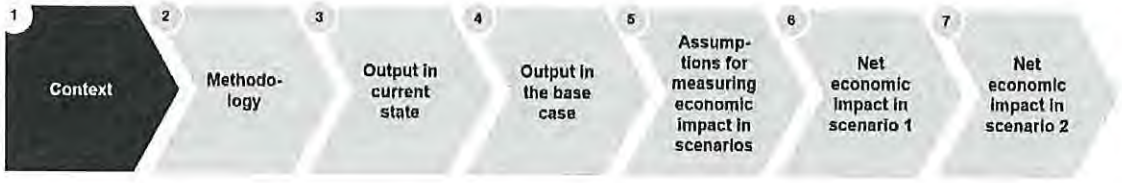
1 Context



1.1 Company overview

Ferguson Marine (Port Glasgow) Limited ("FMPG" or "the Company") operates a shipyard on the River Clyde and has over 100 years of heritage delivering shipbuilding, ship repairs, fabrication and engineering services to support the Scottish ship industry. The Company is based in Port Glasgow and, as of 23 November 2022, had 410 employees (360 permanent, 45 temporary, in addition to 5 contracted workers). The Company's sole shareholder and immediate parent entity is Ferguson Marine (Port Glasgow) Holdings Limited and is ultimately owned by the Scottish Ministers.

1.2 Background to SG intervention

The business and assets of the shipyard were acquired from administration by Clyde Blowers Capital ("CBC") in 2014 via a new company, Ferguson Marine Engineering Limited ("FMEL"). In October 2015, FMEL was awarded a £97m contract to build two ferries (801 and 802) for Caledonian Maritime Assets Limited ("CMAL"). At the date of contract award, the estimated completion dates for 801 and 802 were April 2018 and October 2018, respectively.

Following the contract award, FMEL began to experience difficulties in agreeing on technical design with CMAL, which resulted in significant contract delays and financial difficulties for FMEL. These issues continued to persist over the following two years. SG provided financial support to FMEL in the form of two loans totalling £45m across 2017/18. Despite this, FMEL became cash flow insolvent, and its directors placed the business into administration in August 2019. Following an unsuccessful sales process, the business was nationalised by the Scottish Government ("SG") in December 2019. Certain assets of FMEL were transferred to FMPG, and the ferry build contracts for:

- Hull 801 and;
- Hull 802

were novated to Ferguson Marine (801-802) Limited, both entities ultimately owned by the Scottish Ministers). Following the nationalisation of FMPG by SG in 2019, the Company has continued to face cost and timetable challenges.

1.3 Current situation

From March 2022, the new CEO, DT, has implemented a full 'reset' strategy to strengthen the Management team and improve operational and reporting processes. The subsequent re-forecasting process resulted in a material £81m increase in the FCTC estimate compared to March 2022. SG was provided with the updated FCTC estimate on 23 September 2022.

SG has advised that completion of 801 and 802, and securing a sustainable future for the yard, remains the preference of Scottish Ministers. However, as part of the required AO assessment, SG is considering the counterfactual options to complete or otherwise deliver vessels equivalent to 801 and 802, and the implications of these.

Separately, SG has commissioned Teneo to support the project management and coordination of the evidence and data required to support SG's AO assessment, including summarising information that can be used to compare the financial considerations of these counterfactual options.

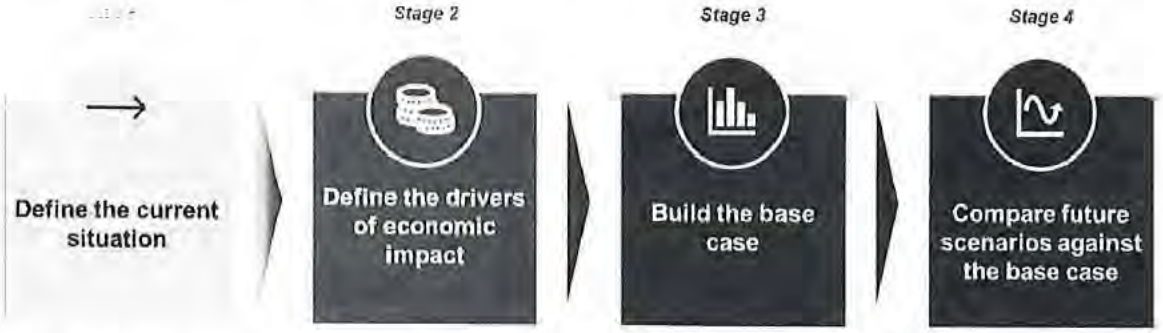
One key input to this assessment is the potential impact on the local economy, as such SG has commissioned Teneo to perform an Economic Impact Assessment to understand the current economic value FMPG contributes to the Scottish economy and also how this would change if certain input assumptions (number of full-time employees (FTEs), production focus etc.) were to change.

2 Methodology

2.1 Overview of approach

The 801 and 802 vessels are unlikely to be representative of what the short-term future operation at FMPG encompasses. The approach to modelling the economic impact of any scenario, therefore, must be considered against a fair representation of the future state of the shipyard. That is to say, we are assessing the difference in economic impact of the future state of the yard after the completion of 801 and 802, against a number of proposed futures for the yard. To do this, we first need to understand the current output, then look at the base position after completion of 801 and 802, before the scenarios. For this reason, we have developed a four-stage approach, shown in Figure 4, to model the economic impact of any future scenarios.

Figure 4: Approach to the economic impact assessment



All economic impacts are measured in terms of **Gross Value Added (GVA)**, the measure of the value of goods and services produced by the shipyard (more detail on how this is calculated can be found in section 2.2).

- Stage 1 considers the **'current state'**. This is the GVA of today's operation of the shipyard, in building ferries 801 and 802, over an annual basis (for the purposes of this exercise, the period August 2022 – July 2023 is considered). This assumes a workforce of 360 FTEs, 45 temporary workers [redacted] and 5 contracted workers.

- Stage 2 determines FMPG's most significant drivers of economic impact, which could range from spending on employees' wages to supplier and sub-contractor costs. This

helps to understand what aspects of the business generate the greatest economic impact within Scotland and the local economy of Port Glasgow. The drivers of economic impact are shown in Figure 5.

- Stage 3 considers the economic impact of the **'base case'**. This is the GVA of the most representative example of the future state of the business. The current business plan of FMPG (which is still a work in progress and not due to be completed until February 2023) assumes that the business will be able to [redacted] For the purposes of this EIA, we have assumed that FMPG can [redacted] This assumes a business of [redacted] ramping up to producing [redacted] per year. For the purposes of the GVA generated, we have taken the base case as the operation when the shipyard is producing [redacted] small vessels a year and not considered a period where this is being scaled up in the first two years of [redacted]

- Stage 4 assesses the economic impact in the GVA terms of two scenarios we have developed against the base case. These two scenarios are:
  - **Scenario 1:** [redacted] – in this scenario, we assume the shipyard moves from the base case to employing [redacted] FTEs and producing [redacted] small vessels per year. More detail on assumptions can be found in Section 6.
  - **Scenario 2:** [redacted]

These scenarios were agreed upon with SG during a meeting on the 13th December 2022.

2.2 Approach to calculating GVA

A robust economic impact assessment must consider direct, upstream and downstream impacts. For clarity, the definitions of these are:

- **Direct** – the results of the money spent in Scotland by FMPG; this includes money spent to pay for salaries. The direct effects of the economic activity created by FMPG as a company by building ferries;

- **Upstream** – points in production that originated earlier on in the processes than production at the shipyard, e.g. the economic impacts of the supply chain of FMPG and;

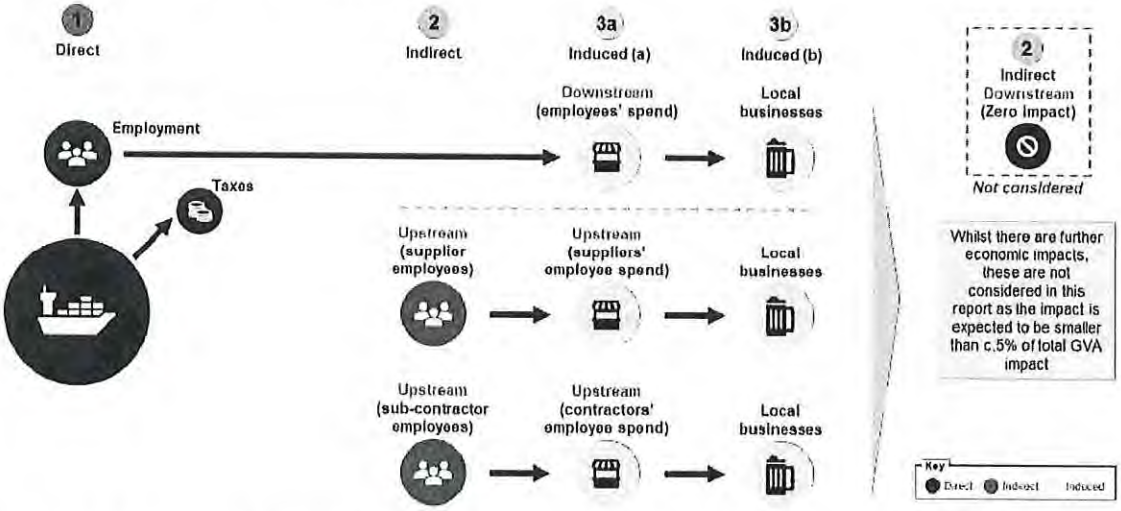
- **Downstream** – points where the economic impact is felt because of production at the shipyard, e.g. the economic impact of employees of the shipyard spending their wages in the local community.

Furthermore, the economic impact assessment must also consider the indirect, and induced economic impacts and how these interplay between both upstream and downstream economic flows. For clarity, the definitions of these are:

- **Indirect** – a measure of this increase in business-to-business activity in Scotland, not including the initial round of spending, which is included in the direct effects; this includes money spent by suppliers on their labour force and;
- **Induced** – the results of increased personal income caused by the direct and indirect effects as households earning a salary will spend within businesses in the local community.

Figure 5 represents how we have considered these within the modelling context of FMPG. It is critical to note that we have **not considered the indirect downstream economic impacts of FMPG**, for example the sale of ferry tickets. This would typically consist of the net benefit generated to the local community of having ferries built and the revenue these engender; however, to keep this assessment pure, we need to assume the outcome is always that ferries are built; we are assessing the best way for that to be achieved financially. One of those assessments is the local economic impact of the yard continuing to construct the ferries, but the benefit of this cannot be included in the calculation as that will occur in all scenarios (including closure).

Figure 5: Economic impact breakdown



We have developed the GVA figure for each component part of Figure 5 through a combination of **FMPG internal data**, specifically for the direct impacts and through the use of **2019 Scottish Government Type I and Type II output and employer multipliers**, primarily for the indirect and induced impacts in accordance with The Green Book (central government guidance on appraisal and evaluation). More specific details on how these have been calculated and applied can be found in Sections 0 and 5 of the report. Total GVA is calculated as a sum of the following:

- **Direct impacts** – as a proxy for the output produced by FMPG, all costs to the business have been taken to model the direct impact:
  - Total **employment costs** to FMPG, including gross salaries, pensions, car allowances etc. and all costs on temporary and contracted workers and;
  - Total **taxes paid** by FMPG on business rates, national insurance, corporation tax (if relevant) etc.;
    - For the purposes of this document, we assume all tax paid in Scotland remains in Scotland, however we are aware in reality National Insurance tax receipts are collected centrally by HMRC and redistributed

- **Indirect upstream impacts**
  - Total indirect **economic output benefits generated by supplier activities** in the FMPG supply chain and;
  - Total indirect **economic output benefits generated by sub-contractor activities** in the FMPG supply chain.

- **Induced upstream impacts**
  - Total induced **economic output benefits generated by FMPG supplier employees spending their wages in the Scottish economy and;**
  - Total induced **economic output benefits generated by FMPG sub-contractor employees spending their wages in the Scottish economy.**

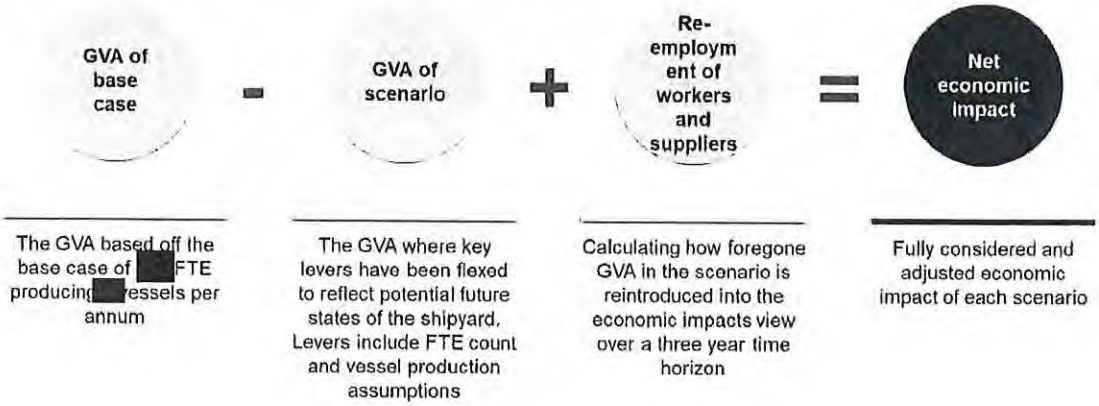
- **Induced downstream impacts**
  - Total induced **economic output benefits generated by FMPG employees spending their wages in the local economy.**

While we appreciate there are a number of sub-contractors ([redacted] as of November 2022) on-site at FMPG, including [redacted] at present from [redacted], we do not try to isolate the behaviour of these individuals, as it is assumed their GVA is calculated as part of the induced downstream impacts, and any additional GVA attributed to these workers through other methods would be viewed as double-counting and unfairly inflate the total GVA generated by the shipyard.

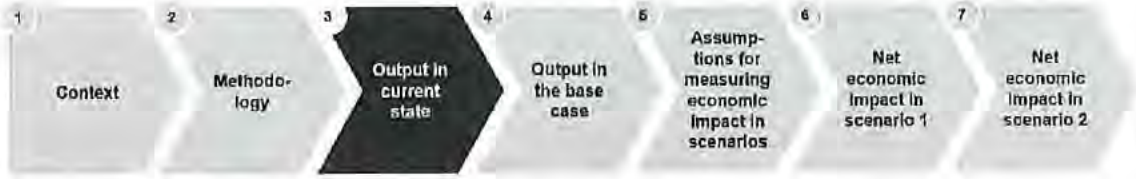
2.3 Approach to calculating the net economic impact of a scenario

Figure 6 outlines our approach to calculating the net economic impact of the two scenarios assessed. The scenarios are modelled over a period of three years. Initially, we assume that reductions in the GVA created by the shipyard directly and indirectly are the best estimate of the impact on the wider Scottish economy – that is, that workers are unemployed and inactive, and suppliers do not immediately undertake other work. However, over time, normal economic adjustment processes mean that workers and other resources made idle by reduction in the shipyard's activity (or complete closure) will be gradually reemployed in other economic activity. We model this process based on available empirical evidence. This will, over time, partially offset the initial reduction in GVA and employment.

Figure 6: Approach to the calculation of the net economic impact



3 Output in current state



Within this section, we will consider the GVA generated from the current state split into the following areas:

- Direct impact;
- Indirect upstream;
- Induced upstream and;
- Induced downstream.

The sum of each of these will be the total GVA generated by the shipyard in its current state. Within each of these areas, the breakdown of the component parts highlighted in Figure 5 will also be provided, including the methodology used to calculate these. The period considered is the 12 months from August 2022 – July 2023 to provide a representative view of how the organisation operates today.

3.1 Direct Impacts

The total annual GVA generated from direct impacts in the current state is £17.1m

Employment

This calculation takes the workforce as of 23 November 2022 of 360 FTEs, 45 temporary workers [redacted] and 5 contracted workers. For each FTE, a figure has been provided by FMPG for base gross salary, car allowance, shift allowance, overtime allowance and pension contribution to provide a total cost to the business. For the 45 temporary workers, FMPG has provided the cost paid per individual, and for the 5 contracted workers, their salaries have been assumed to be the same as those with the same job title as an FTE (as was informed by FMPG).

This provides a total annual cost from employment in the current state of [redacted], broken down by component part in the Appendix, Table 15.

Taxes

National insurance taxation paid by FMPG has been provided per employee, and business rates have been calculated using the Scottish government calculator for the postcode of the shipyard. As the shipyard does not generate any revenue, corporation tax is not included in

the overall GVA figure. As income tax is included in the employment GVA figures above, this number is also not included here to avoid double counting.

This provides a total annual cost from taxes in the current state of £1.3m, broken down by component part in the Appendix, Table 16.

3.2 Indirect Upstream impacts

Indirect upstream impacts are those economic impacts which are not generated directly by FMPG, but occur in the supply chain, through direct suppliers or sub-contractors that provide the shipyard with goods and services.

The total annual GVA generated from indirect upstream impacts in the current state is £5.8m

For all indirect upstream impacts, the number of jobs created is not considered part of this assessment.

Suppliers

The list of spending on materials has been extracted from the model '2022 09 13 GDC FM(PG) Ltd P4 Jul-22 Actuals and F'cast 2023 and 2024' (provided by FMPG) for the period August 2022 – July 2023 (this can be found in the Appendix Table 17). In order to determine the proportion of this spend that is used in Scotland, the total amount spent by suppliers on ferries 801 and 802 has been analysed (this can be found in the Appendix, Table 18) to determine that 33% of all spending has been on Scottish suppliers, as shown in Table 1. This 33% has been applied to the total spend on suppliers between August 2022 and July 2023 to calculate the total output. The reason all non-Scottish suppliers have been excluded is because this economic impact assessment only considers the overall effect on the Scottish economy, not the wider UK or overseas. The total output generated by suppliers is £5.3m.

Table 1. Suppliers spend by geography

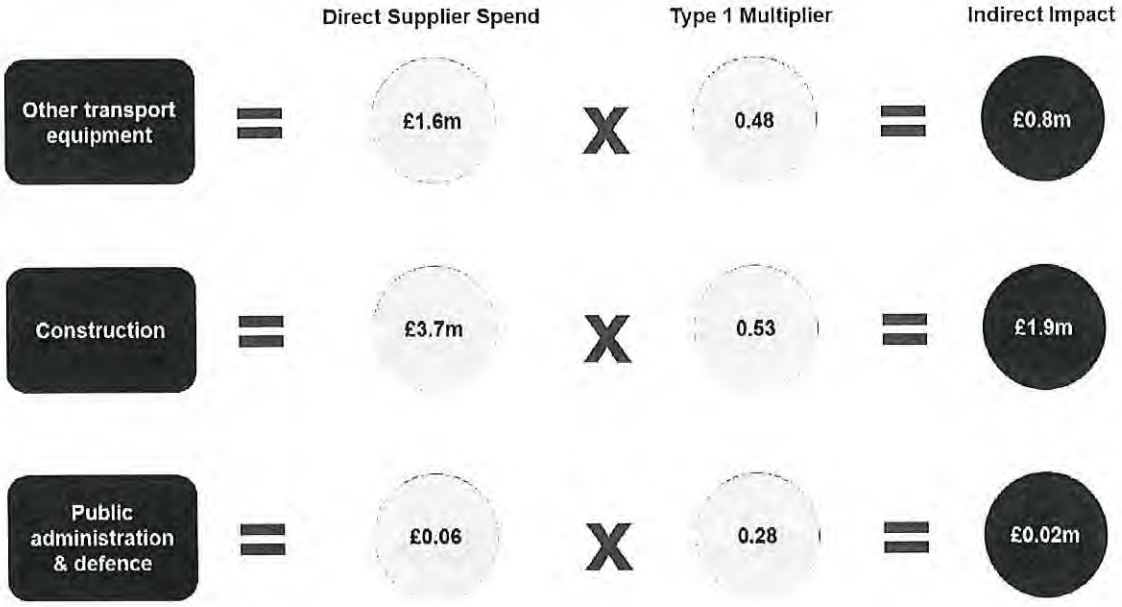
Geography	Proportion of spend
Scotland	33%
UK	18%
Overseas	49%

Source: '801&2 Supplier spend by UK region vrs overseas' provided by FMPG

The indirect supplier impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of material suppliers to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by

suppliers to FMPG increasing their production and therefore increasing their demand from their suppliers up the supply chain. The calculation for this is shown in Figure 7.

Figure 7: Current state supplier indirect multiplier calculations



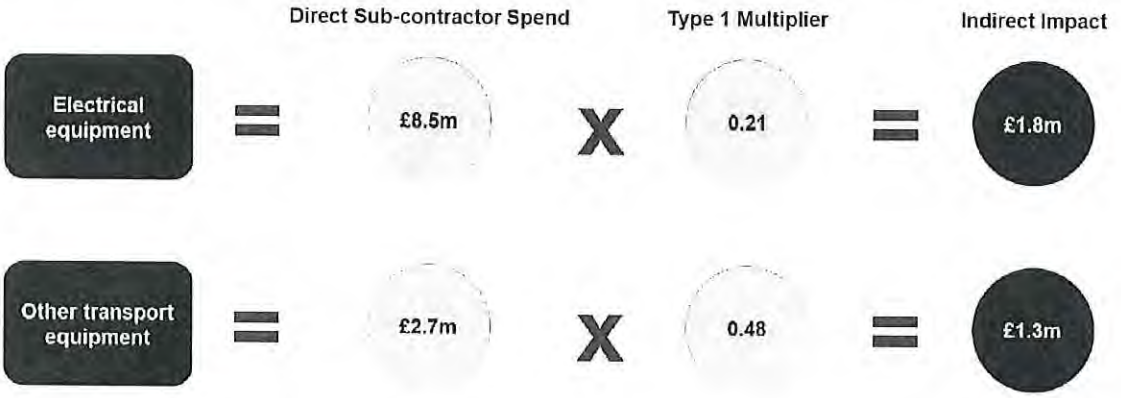
This provides a total annual indirect GVA from suppliers in the current state of £2.7m.

Sub-contractors

The list of spending on sub-contractors has been extracted from the model '2022 09 13 GDC FM(PG) Ltd P4 Jul-22 Actuals and F'cast 2023 and 2024' (provided by FMPG) for the period August 2022 – July 2023. To determine the output generated in Scotland, each sub-contractor has been analysed to assess if they have a regional office in the country. If so, the cost to these sub-contractors is included in the total output as this is directly contributing within the Scottish economy. The list of sub-contractor, their regional office and August 2022 – July 2023 spend can be found in the Appendix, Table 20. Sub-contractor salaries have not been considered as part of this assessment, including those that are on-site at the shipyard, as this will be double counting alongside the cost to FMPG of paying for the sub-contractor. The total output generated by sub-contractors is £11.2m.

The indirect sub-contractor impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of sub-contractor activities to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by sub-contractors to FMPG increasing their production and therefore increasing their demand from their suppliers up the supply chain. The calculation for this is shown in Figure 8.

Figure 8: Current state sub-contractor indirect multiplier calculations



This provides a total annual indirect GVA from suppliers in the current state of £3.1m.

3.3 Induced upstream impacts

Induced upstream impacts are those economic impacts which are not generated directly by FMPG, but occur through the employees of businesses in the supply chain, e.g. direct suppliers or sub-contractors spending their wages in the local economy.

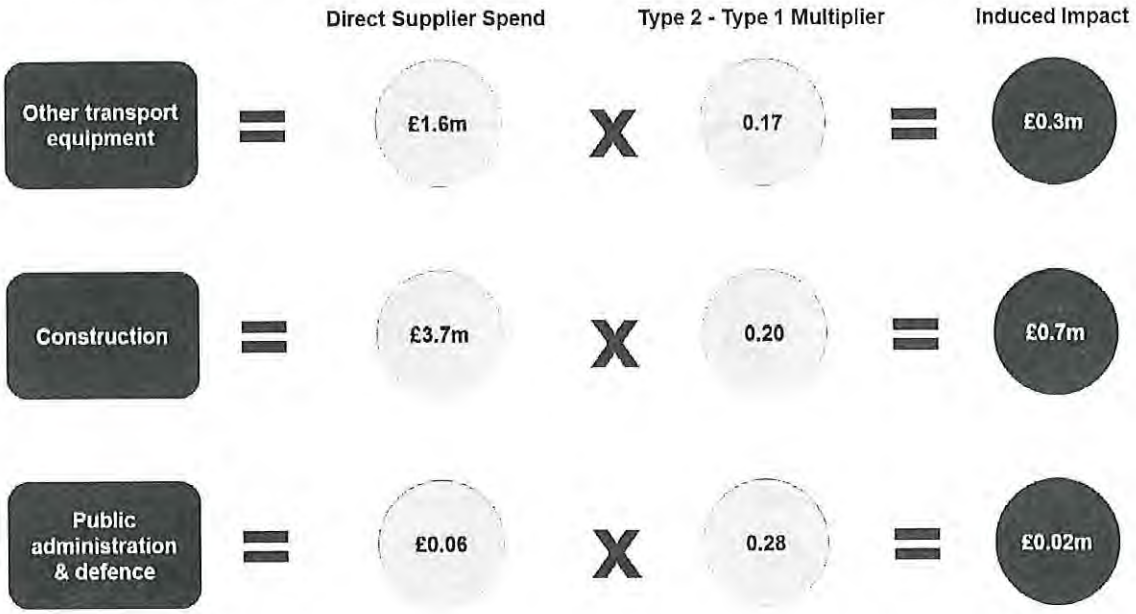
The total annual GVA generated from induced upstream impacts in the current state is £3.5m

For all induced upstream impacts, the number of jobs created is not considered part of this assessment.

Suppliers

The induced supplier impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by the relevant industry of material supplier to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by the increased spend by employees of suppliers through them increasing their production through work with FMPG and therefore increasing the overall levels of household income in the economy. The calculation for this is shown in Figure 9.

Figure 9: Current state supplier induced multiplier calculations

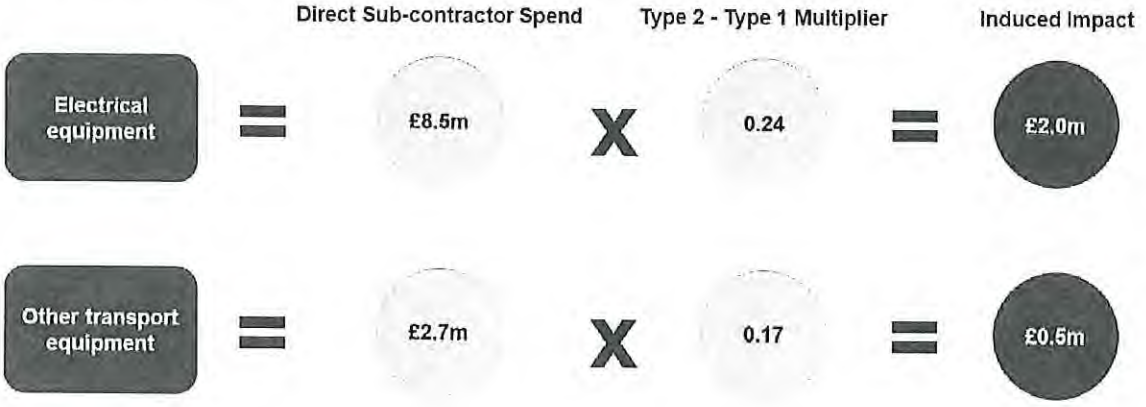


This provides a total annual indirect GVA from suppliers in the current state of £1.0m.

Sub-contractors

The induced sub-contractor impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by relevant industry of sub-contractor activities to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by the increased spend by employees of sub-contractors through them increasing their production through work with FMPG and therefore increasing the overall levels of household income in the economy. The calculation for this is shown in Figure 10.

Figure 10: Current state sub-contractor induced multiplier calculations



This provides a total annual indirect GVA from suppliers in the current state of £2.5m.

3.4 Induced Downstream

Induced downstream impacts are those economic impacts which are generated by FMPG, employees spending their wages in the local economy.

The total annual GVA generated from induced downstream impacts in the current state is £6.6m

The total number of additional jobs generated in the local economy through the presence of the shipyard is 155.

The induced downstream impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) for 'other transport equipment' to the total direct GVA of £39.1m. Within the area of Port Glasgow, over 55% of local businesses are F&B, retail or health and beauty, industries to which this induced downstream impact would have a significant effect.

The total number of additional jobs generated has been calculated by applying the 2019 Scottish Government Type II output employment multipliers subtracted by the Type I output multipliers (to isolate the induced impact) for 'other transport equipment' to the total number of employees at the shipyard (410, including FTEs, temporary and contracted staff).

3.5 Total economic impact

Overall, the total annual GVA generated by the shipyard in the current state is £33.1m

Figure 11: Total GVA in the current sate over time, August 2022 – July 2023

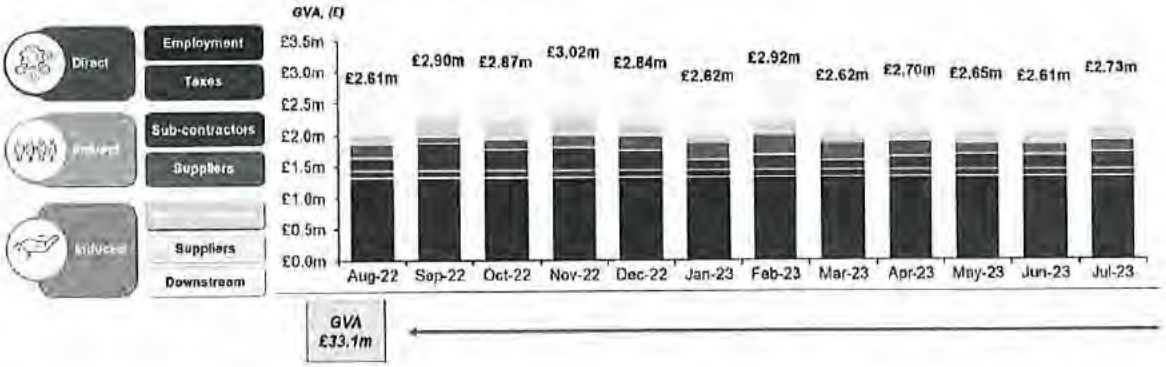


Table 2: Annual GVA by component part in the current state

	Component	Annual GVA	Description
Direct	Employment	[redacted]	FMPG spend on total gross salaries plus car allowance, shift allowance, overtime allowance and pension contribution for FTEs and cost to FMPG of temporary and contracted workers
Direct	Taxes		National insurance and business rates paid by FMPG
Indirect	Sub-contractors		GVA generated by sub-contractors as a result of providing services to FMPG
Indirect	Suppliers		GVA generated by suppliers as a result of providing materials to FMPG
Induced	Sub-contractors		GVA generated by sub-contractors' employees spending their wages in the local economy
Induced	Suppliers		GVA generated by suppliers' employees spending their wages in the local economy
Induced	Downstream		GVA generated by FMPG employees spending their wages in the local economy
	Total		

Source: Teneo analysis

In the current state, the largest driver of GVA is the direct employment. This comes primarily from having a large labour force on site at the shipyard including a high number of temporary workers (45) who have higher costs associated with them than FTEs. Furthermore, induced downstream impacts make up c.20% of total GVA generated by FMPG, indicating there are material benefits to businesses in the local community driven by the presence of the shipyard.

The GVA generated falls deeper into 2023 as it is assumed work on Hull 801 will be complete by May 2023 and therefore less direct costs such as supplies will be required, however this assessment in the current state does not include a fall in workers, both permanent and temporary during this same period.

4 Output in the base case

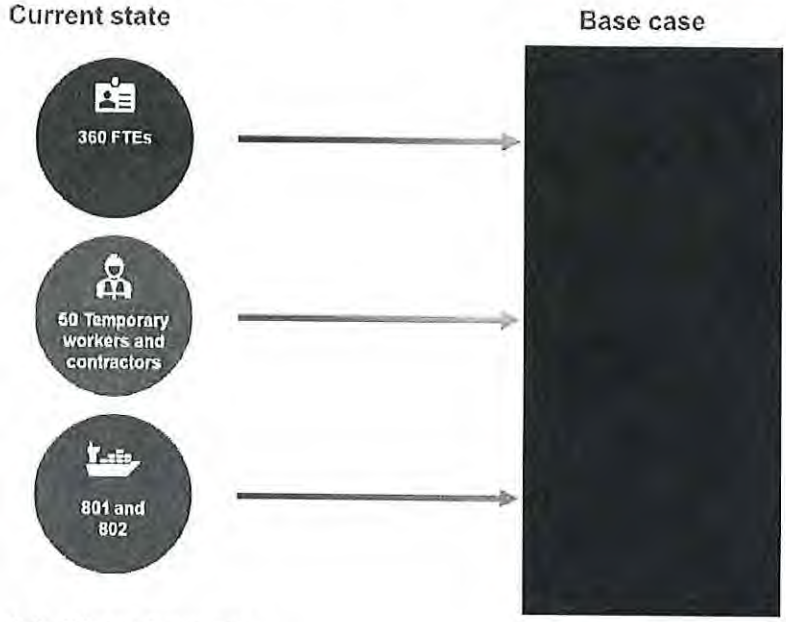
Within this section, we will consider the GVA generated from the base case split into the following areas:

- Direct impact;
- Indirect upstream;
- Induced upstream and;
- Induced downstream.

The sum of each of these will be the total GVA generated by the shipyard in the base case. Within each of these areas, the breakdown of the component parts highlighted in Figure 5 will also be provided, including the methodology used to calculate these.

Through discussions with FMPG, it has been agreed the base case is likely to be achieved through the [redacted] This assumes a business of [redacted], with no temporary or contracted workers, ramping up to producing [redacted] small vessels per year. For the purposes of the GVA generated, we have taken the base case as the operation when the shipyard is producing [redacted] small vessels a year and not considered a period where this is being scaled up in the first two years of the [redacted] For this reason, we also do not consider the Capex invested to reach this point.

Figure 12: Current state and base case comparison



4.1 Direct Impacts

The total annual GVA generated from direct impacts in the base case is [redacted], compared with £17.1m in the current state

Employment

To scale labour from the current state of 360 FTE to a proposed base case of [redacted] FTE, we used a steady multiplier [redacted] to be applied to each employee structure, such as 'Health & Safety'. Figures were then rounded to ensure individual FTE data points were represented as integers. When calculating the salaries in the base case, we applied an average salary per structure to each scaled-down structure FTE count. These structure parts were finally summed up to create a full picture for the [redacted] FTE business. The breakdown of employees by structure can be found in the Appendix, Table 21.Table 21. Number of employees by structure in the base case

This provides a total annual cost from employment in the base case of [redacted], compared to £15.8m in the current state.

Taxes

National insurance taxation paid by FMPG has been scaled down from the current state in the same way that employees have been, and business rates are assumed to be the same as they are in the current state as this does not scale with the type or size of operations. As the shipyard does not generate any revenue in the current state, we have assumed the same in the base case, and therefore, corporation tax is not included in the overall GVA figure. As

income tax is included in the employment GVA figures above, this number is also not included here to avoid double counting.

This provides a total annual cost from taxes in the base case of [redacted], compared to £1.3m in the current state.

4.2 Indirect Upstream impacts

Indirect upstream impacts are those economic impacts which are not generated directly by FMPG, but occur in the supply chain, through direct suppliers or sub-contractors that provide the shipyard with goods and services.

The total annual GVA generated from indirect upstream impacts in the base case is [redacted] compared with £5.8m in the current state

For all indirect upstream impacts, the number of jobs created is not considered part of this assessment.

Suppliers

The list of spending on suppliers in the base case has been provided by FMPG in the form of total spending per supplier per small vessel built by location. In a similar vein to the current state, it is possible to thereby calculate the total output by determining supplier spending in Scotland and multiplying this figure by three (under the assumption that [redacted] vessels are built per year in this operation). The supplier spending breakdown by country of origin is shown in Table 3. Suppliers spend breakdown. The full list of suppliers, their location and spend in the base case per small vessel can be found in the Appendix Table 22.

Table 3. Suppliers spend breakdown

Geography	Proportion of spend
Scotland	28%
UK	42%
Overseas	30%

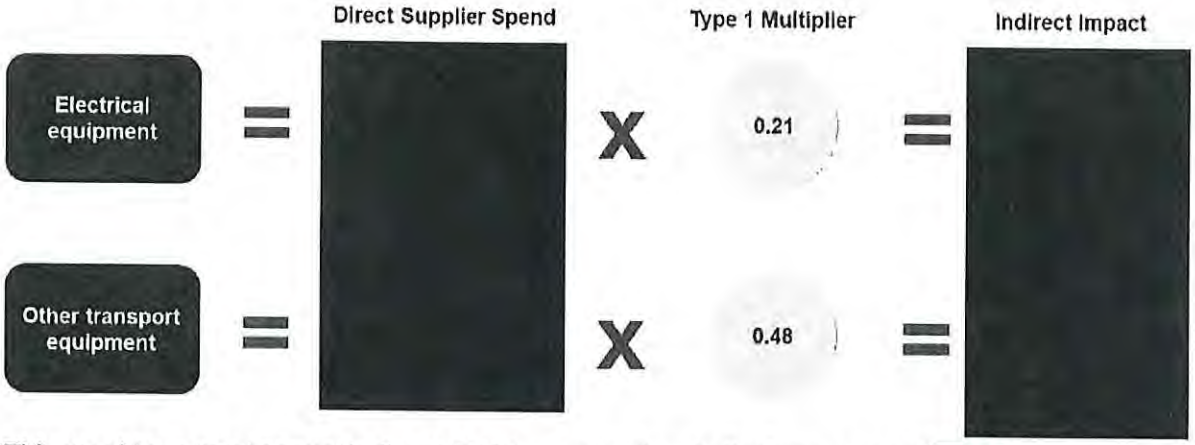
Source: 'Teneo' provided by FMPG

This provides a total annual cost from suppliers in the base case of [redacted], compared to £5.3m in the current state.

The indirect supplier impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of material suppliers to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by

suppliers to FMPG increasing their production and therefore increasing their demand from their suppliers up the supply chain. The calculation for this is shown in Figure 13.

Figure 13: Base case supplier indirect multiplier calculations



This provides a total annual indirect GVA from suppliers in the base case of [redacted], compared to £4.4m in the current state.

Sub-contractors

While FMPG has not considered what sub-contractors would be used in the future base case of the business, upon discussion (and in writing in an email on 7th December 2022 from FMPG), it was agreed that the best proxy to use was the spend on sub-contractors to build MV Catriona 727. This assumes four sub-contractors, all based in Scotland (table of sub-contractors can be found in the Appendix, Table 24) and the total amount spent on MV Catriona has been multiplied by 2.5 to provide a proxy estimate for sub-contractor spending in the base case. An assumption of simply multiplying by 3 was deemed to be too high due to the ongoing nature of the contracts where there are likely to be some discounts.

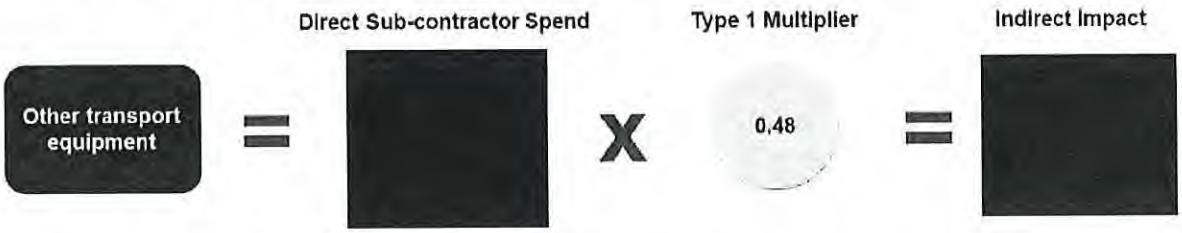
While it is likely, there will be a sub-contractor package for the batteries, switchboards etc., this will most likely be an overseas provider, as this will be a CMAL appointment and therefore has not been considered in this economic impact assessment.

This provides a total annual cost from sub-contractors in the base case of [redacted], compared to £11.2m in the current state.

The indirect sub-contractor impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of sub-contractor activities to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by sub-contractors to FMPG increasing their production and therefore increasing their demand from their suppliers up the supply chain. The calculation for this is shown in

Teneo

Figure 14: Base case sub-contractor indirect multiplier calculations



This provides a total annual indirect GVA from suppliers in the base case of [redacted], compared to £3.1m in the current state.

4.3 Induced upstream impacts

Induced upstream impacts are those economic impacts which are not generated directly by FMPG, but occur through the employees of businesses in the supply chain, e.g. direct suppliers or sub-contractors spending their wages in the local economy.

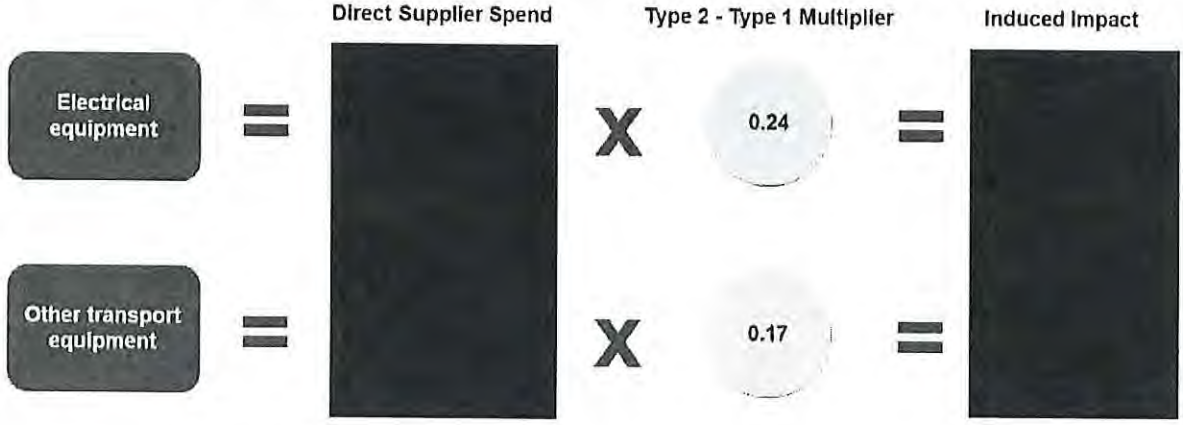
The total annual GVA generated from induced upstream impacts in the base case is [redacted] compared with the £3.5m in the current state

For all induced upstream impacts, the number of jobs created is not considered part of this assessment.

Suppliers

The induced supplier impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by the relevant industry of material suppliers to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by the increased spend by employees of suppliers through them increasing their production through work with FMPG and therefore increasing the overall levels of household income in the economy. The calculation for this is shown in Figure 15.

Figure 15: Base case supplier induced multiplier calculations

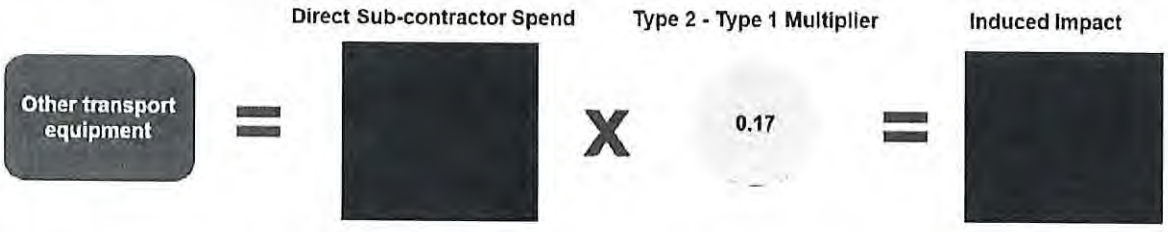


This provides a total annual indirect GVA from suppliers in the base case of [redacted], compared to £2.5m in the current state.

Sub-contractors

The induced sub-contractor impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by relevant industry of sub-contractor activities to the FMPG spend in that material category in Scotland. This provides a figure of economic output driven by the increased spend by employees of sub-contractors through them increasing their production through work with FMPG and therefore increasing the overall levels of household income in the economy. The calculation for this is shown in Figure 16.

Figure 16: Base case sub-contractor induced multiplier calculations



This provides a total annual indirect GVA from suppliers in the base case of [redacted], compared to £1.0m in the current state.

4.4 Induced Downstream

Induced downstream impacts are those economic impacts which are generated by FMPG, employees spending their wages in the local economy.

The total annual GVA generated from induced downstream impacts in the base case is [redacted] compared to £6.6m in the current state

The total number of additional jobs generated in the local economy through the presence of the shipyard is [redacted]

The induced downstream impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) for 'other transport equipment' to the total direct GVA of [redacted].

The total number of additional jobs generated has been calculated by applying the 2019 Scottish Government Type II output employment multipliers subtracted by the Type I output multipliers (to isolate the induced impact) for 'other transport equipment' to the total number of employees at the shipyard ([redacted]).

4.5 Total economic impact

Overall, the total annual GVA generated by the shipyard in the base case is [redacted] compared to £33.1m in the current state

Figure 17: Total GVA in the base case over time

Table 4: Annual GVA by component part in the base case

	Component	Annual GVA	Description
Direct	Employment	[redacted]	FMPG spend on total gross salaries plus car allowance, shift allowance, overtime allowance and pension contribution for FTEs and cost to FMPG of temporary and contracted workers
	Taxes	[redacted]	National insurance and business rates paid by FMPG
Indirect	Sub-contractors	[redacted]	GVA generated by sub-contractors as a result of providing services to FMPG
	Suppliers	[redacted]	GVA generated by suppliers as a result of providing materials to FMPG

Induced	Sub-contractors	[redacted]	GVA generated by sub-contractors' employees spending their wages in the local economy
	Suppliers	[redacted]	GVA generated by suppliers' employees spending their wages in the local economy
	Downstream	[redacted]	GVA generated by FMPG employees spending their wages in the local economy
	Total	[redacted]	

Source: Teneo analysis

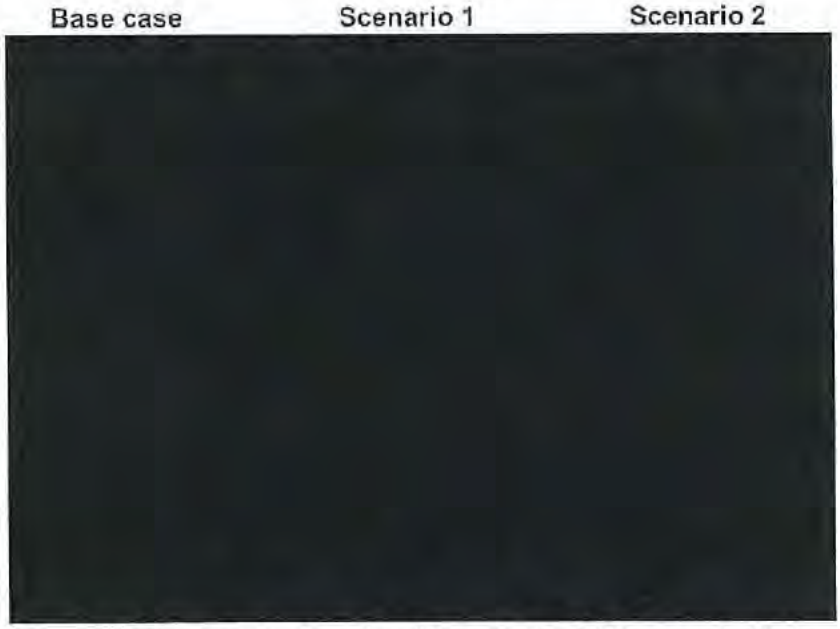
In the base case, the largest driver of GVA is employees' costs. Induced downstream GVA generated remains high in the base case, indicating there are material benefits to businesses in the local community driven by the presence of the shipyard.

5 Assumptions for measuring net economic impacts in scenarios

This section explores the net economic impact of transitioning from the base case of [redacted] TEs and developing [redacted] small vessels (alongside other assumptions in Section 4.2) to two identified scenarios which are:

- **Scenario 1:** [redacted]
- **Scenario 2:** [redacted]

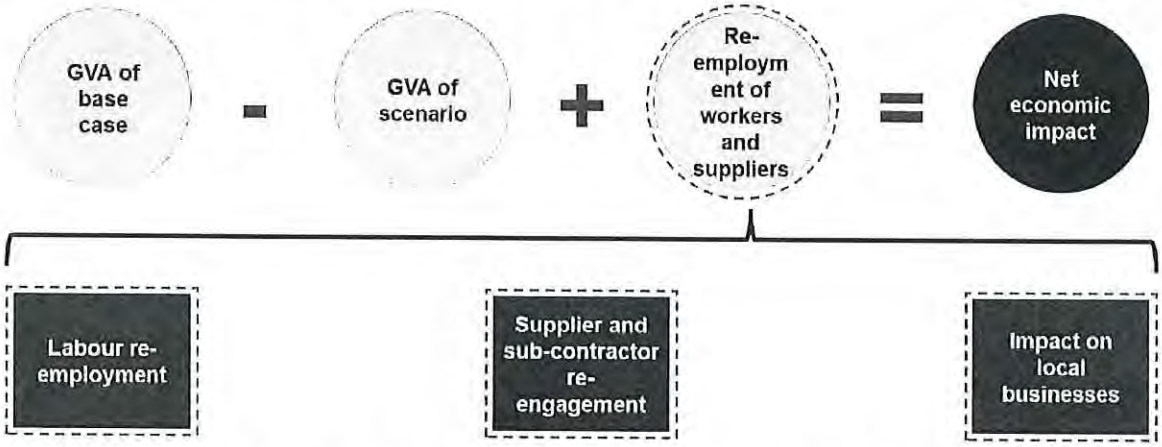
Figure 18: Comparison of base case to scenario 1 and scenario 2



For each of these scenarios, the difference in GVA generated between the base case (not the current state) and the scenario is calculated, and then consideration is given to what will happen to the foregone GVA, e.g. how labour will be re-employed over time and how suppliers will be re-engaged over time across the economy. This approach is shown in Figure 19. The scenarios are modelled over a period of three years, and the net economic impact is assessed

in the third year so that the long-term impacts can be considered, including the re-employment of workers.

Figure 19: Detailed approach to modelling net economic impact



For both scenarios, there are a number of general assumptions that have been taken that apply to each when considering how foregone GVA is re-introduced into the economy over time, and these are broken down into four categories:

- **Labour re-employment** – how labour foregone in each of the scenarios re-enters the labour force, including where they work, how much they earn and if they retire across the three years assessed;
- **Supplier/sub-contractor re-engagement** – how supplier and sub-contractor costs foregone in each of the scenarios re-enters the economic value chain across the three years assessed;
- **Impact on local businesses** – how local businesses are impacted by each of the scenarios and if they may be required to close down due to reduced demand across the three years assessed.

5.1 Labour re-employment assumptions

Within this section an assessment is made on how employees laid off from the shipyard in each of the scenarios re-enters the workforce, specifically in terms of where they work (e.g. in which sector), how long it takes them to find work, how much they will be paid and if they retire. The methodology for labour re-employment has been established based on four main assumptions, explained in detail in this subsection.

Figure 20. Re-employment assumptions

Historical re-employment

A significant decline in shipbuilding activity in the last decade has provided multiple robust case studies elaborating on the re-employment of redundant employees. To date, seven closures across Europe, including the United Kingdom, have been analysed in the long-term context.

Table 5: Table of case studies examined

Name	Location	Year of closure	Area
Danyard	Denmark	1999	Shipyard
Elsinore	Denmark	1983	Shipyard
Uddevalla	Sweden	1986	Shipyard
Nakskov	Denmark	1986	Shipyard
Aalborg	Denmark	1987	Shipyard
B&W	Denmark	1997	Shipyard
Swan Hunter	UK	1993	Shipyard
Harland and Wolff	UK	2001	Shipyard
Longbridge Rover	UK	2005	Manufacturing plant

Source: Teneo research and analysis

The consensus has been established, with 60-70% of all employees finding new jobs three years after the operations have ceased. However, this varies by age band, as shown in Table 6.

The overall number was, in most cases, strongly influenced by the exceptionally low re-employment rate of the population aged 55 and above, standing at c.8-16%. The employees in this bracket have historically faced the most troubles when seeking work and have typically moved to the neighbouring marine-oriented manufacturing sites. [redacted] The reason for such low rate of re-employment among this age bracket, is further discussed in the *Retirement* subsection.

Table 6. Average historical re-employment rates by age group

Age group	Average re-employment rate after 3 years
16-26	74%%
26-40	76%
40-55	67%
55+	16%

Source: Teneo research and analysis

Table 7. Historical re-employment after shipyards/plants closures

Name	Average re-employment rate after 3 years
Danyard	64%
Elsinore	66%
Uddevalla	63%
Nakskov	60%
Aalborg	65%
B&W	70%
Swan Hunter	60%
Harland & Wolff	80%
Longbridge Rover	90%

Source: Teneo research and analysis

These figures were adopted as a starting point and adjusted to the current economic outlook and local area in order to conclude the predicted re-employment rate as can be found in the *Labour assumptions summary* subsection.

The previous studies analysed also provide a view on the speed of re-employment over the span of three years, which has been used in the phasing of our re-employment and is shown below in Table 11.

Current vacancy rates in the region

Next, it is critical to explore current vacancies available in the region in order to establish the possible paths of re-employment. Table 8 showing job density, the number of jobs per 100 people in Scotland and Inverclyde. While it is evident there are currently less overall jobs in Inverclyde per person than overall in Scotland, the manufacturing job density is higher, indicating it is a region with potentially more job prospects in this sector than other areas of the country.

Table 8. Job density in Scotland

Region	Total full-time job density	Manufacturing job density
Inverclyde	61.5%	7.7%
Scotland	66.4%	7.1%

Source: Teneo research and analysis

As of 14 December 2022, there are four listings in the marine industry less than two miles from Port Glasgow. Moreover, there are seven additional vacancies advertised in the 15-mile radius of Port Glasgow. Additionally, the town benefits from the proximity of Glasgow Airport, where there are at least seven generalist engineering jobs offering comparable wages compared to the current FMPG salaries.

Port Glasgow and Greenock areas, where most of the current employees are based, has a manufacturing focus. Despite apparent differences between general production and shipbuilding, we assume most skills can be successfully utilised among both. Over 50 distinct listings in manufacturing looking for specialists in maintenance, installing, plumbing, tapering, and drylining, among many others, are currently listed.

The current economic conditions in the region should result in higher-than-average re-employment levels for all age groups in the short-term due to the high number of vacancies in the manufacturing and construction sectors. However, it is important to note that historically a big proportion of the re-employed were working on a temporary or part-time basis. In the cases of Swan Hunter (1993), it was established that 43% of those in employment, were not working full-time. This stands in line with our analysis, concluding that 38% of the jobs available in the area of Port Glasgow as of 14 December 2022 are temporary.

This effect can also be further exaggerated by the worsening economic conditions in the United Kingdom, especially the predicted recession. The studies analysed, clearly outline the fact that re-employment rates are closely tied to the economic growth of the regional economy, and almost all of them have performed better in the times of economic prosperity. The demand-side factors are identified as the most important factor affecting re-employment rates,

which become especially prominent in the low-unemployment, recessionary environment. The companies will look to preserve their current workforce, and reducing recruitment, in order to sustain the output while minimising costs. If such a scenario prevails for a longer time period, it may significantly hinder the expected re-employment rates.

Possible other areas of re-employment

Despite the manufacturing focus of the region, it is typically unlikely for all of employees to find jobs within the sector in circumstances where manufacturing businesses have closed. Historical data from the examples researched suggests that post-closure, between 40-50% of workers were capable of finding employment in similar environments. The rest moved to services, mostly retail and hospitality.

Table 9. Historical re-employment by sector[1]

Name	Re-employment rate in manufacturing/ construction	Re-employment rate in services
Danyard	51.2%	46.8%
Longbridge Rover	40.0%	60.0%

Source: Teneo research and analysis

A similar amount of regional job openings is available in services when compared to manufacturing in the Port Glasgow and Greenock areas. Critically, it is important to recognise that service jobs are usually paid up to 50% less when compared to manufacturing roles. Average salaries per age banding used for the modelling of re-employment can be found in the Appendix, Table 25.

Retirement

The main barrier in recruitment post-closure of shipyards and manufacturing businesses is age according to the case studies outlined in the *Historical re-employment* sub-section. Similar findings were presented in the re-employment analysis conducted three years after the Longbridge Rover plant shutdown, where c.50% of ex-employees named age as the main factor hindering their job search. As such, it is established that everyone in the age group 55+ who does not find a job within three years will be considered retired.

Labour assumption summary

Based on the above, labour re-employment assumptions can be found in the tables within this sub-section.

[1] 1.9% of Danyard workers found re-employment in primary services, which is not expected in this case, given the nature of the region

Table 9 shows labour re-employment rates after three years per age category, which are assumed to be at the higher end of the research due to:

- Higher job density in the manufacturing sector than other parts of the country;
- High prevalence of other shipyard or manufacturing jobs in the local area, and;
- High prevalence of services jobs in the local area.

While a high estimate has also been taken for 55+ employees, this still means 84% of this age cohort will retire within 3 years.

Table 10. Assumed re-employment and retirement assumptions by age, three years post closure Labour re-employment assumptions

Age band	Re-employment rate	Retirement rate
16-25	83%	0%
26-40	85%	0%
41-54	76%	0%
55+	16%	84%

Source: Teneo research and analysis

Table 10 shows the phasing rate applied to those individuals that are re-employed and Figure 21. shows the re-employment curve over the three-year period. The concave nature of the curve indicates that available vacancies are quick to fill up, but for those that do not find a job quickly, this can take a progressively longer time.

Table 11. Assumed re-employment phasing

Months after closure	Re-employment rate phasing
0	0%
3	44%
8	78%
36	100%

Source: Teneo research and analysis

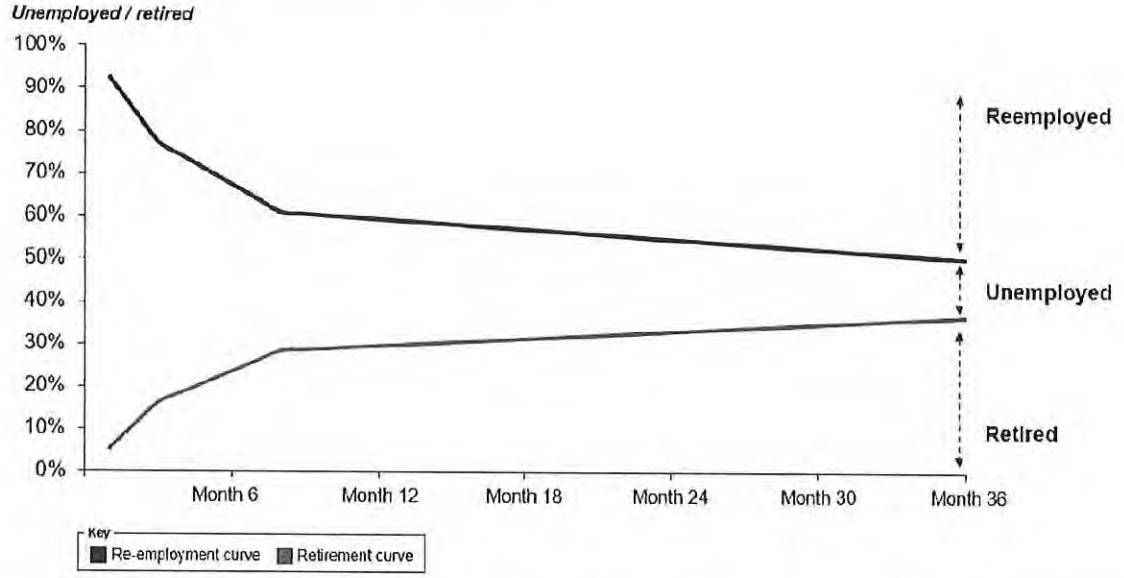
Table 12 shows the assumptions used for re-employment by sector, which highlight a higher proportion of those that do find-re-employment are assumed to enter the manufacturing sector due to the higher prevalence of jobs in this sector in the wider Inverclyde area.

Table 12: Assumed re-employment by sector

Re-employed in manufacturing	Re-employed in services
70%	30%

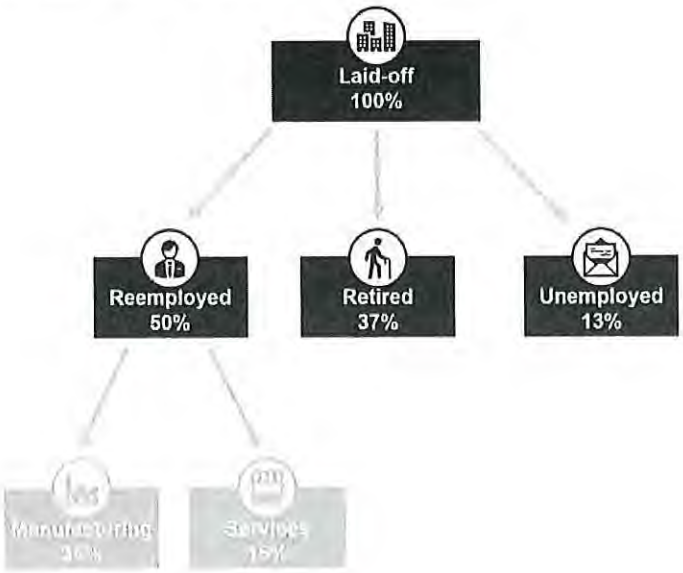
Source: Teneo research and analysis

Figure 21: Re-employment curve and retirement curve



Based on the assumptions laid out above, Figure 22 shows a tree diagram of the proportional splits of how the laid off shipyard workforce will engage with the economy after three years. 50% have re-enter the workforce (split 35% in manufacturing and 15% in services), 37% retire (driven by the high average age of FMPG employees), and 13% remain unemployed.

Figure 22. Split of post-closure reengagement



5.2 Supplier and sub-contractor re-engagement assumptions

Suppliers

As the list of suppliers in the base case does not overlap with suppliers in the current state (with the exclusion of one), it is not possible to state that certain suppliers have a reliance on the shipyard and, therefore, may be under threat of closure if the shipyard reduces operations or closes. For this reason, all supplier output foregone in Scotland has been re-introduced into the economy at the same rate as labour is re-employed (see Table 11), and the same average re-employment rate of individuals aged 16-54 of 81% after three years is applied to the output re-introduced into the economy by suppliers.

Sub-contractors

The situation for sub-contractors is similar to that of suppliers, whereby the list of current sub-contractors does not overlap with the list of future sub-contractors, and therefore, it is not possible to state that certain sub-contractors have a reliance on the shipyard and, therefore, may be under threat of closure if the shipyard reduces operations or closes. For this reason, all sub-contractor output foregone in Scotland has been re-introduced into the economy at the same rate as labour is re-employed (see Table 11), and the same average re-employment rate of individuals aged 16-54 of 81% after three years is applied to the GVA re-introduced into the economy by sub-contractors.

5.3 Impact on local businesses

As part of the induced downstream impact, an assessment has been conducted on the local businesses in Port Glasgow and the surrounding area to determine if any would be under threat of closure. In the instances where businesses do close, the GVA of these outlets' staff being re-employed has not been considered as part of this economic impact assessment. Therefore, any lost GVA from closure is assumed to be consistent throughout the period after closure to the end of the three years assessed. Furthermore, this study does not consider whether businesses in the local area would reduce the number of staff due to falling revenues caused by a reduction in staff or closure of the shipyard.

6 Net economic impact in scenario 1

This section assesses the net economic impact of reducing the shipyard from the base case to a [redacted] FTE business that produces [redacted] small vessels per year over a three-year period across each of the following areas:

- Direct impact;
- Indirect upstream;
- Induced upstream and;
- Induced downstream.

The overall change in GVA between the base case and the scenario in the third year is the net economic impact.

6.1 Direct Impacts

The total annual net direct economic impact in scenario 1 in the third year is [redacted]

Employment

The initial step in this process is to calculate the difference in GVA generated from a workforce of [redacted] FTEs and [redacted] FTEs. To scale labour from the base case of [redacted] FTE to, a steady multiplier [redacted] was applied to each employee structure, such as 'Scaffolding' or 'Health & Safety'. Figures were then rounded to ensure individual FTE data points were represented as integers. When calculating the salaries in the base case, the average salary per structure was applied to each scaled-down structure FTE count. These structure parts were finally summed to create a full view of the [redacted] FTE business. The breakdown of employees by structure in the reduced output scenario can be found in the Appendix, Table 26.

This led to a [redacted] net economic impact per annum.

By applying the re-employment assumptions found in Table 10 and Table 11, to the [redacted] staff [redacted] in this scenario, it is calculated that by the end of the third year modelled, [redacted] staff have retired, [redacted] have been re-employed [redacted] and [redacted] remain unemployed. By applying the average manufacturing and services salaries by age cohort and to those that are re-employed and adding on additional costs, including car allowance, shift allowance, overtime and pension, the total cost of these individuals being re-

employed can be calculated. In the third year, this led to a GVA of [redacted] being added back into the economy.

Figure 23. [redacted]

Economic impact assessments do not include pensions for those individuals that take retirement rather than re-entering the workforce, and for this reason, these pensions are not-reintroduced back into the net GVA position. However, it should be noted that [redacted] members of staff that have retired will still be earning.

Furthermore, economic impact assessments do not include benefit payments as this is considered a transfer of payments between the government and households; however, in the third year, the total benefits payments would equate to [redacted] for those [redacted] individuals unemployed.

This provides a total annual net direct impact from direct employment in scenario 1 in the third year of [redacted].

Taxes

National insurance taxation paid by FMPG has been scaled down from the base case in the same way that employees have been, and business rates are assumed to be the same as they are in the base case as this does not scale with the type or size of operations. As the shipyard does not generate any revenue in the current state, we have assumed the same in this scenario, and therefore, corporation tax is not included in the net impact figure. As income

tax is included in the employment net impact figures above, this number is also not included here to avoid double counting.

The national insurance of those individuals being re-employed has been calculated based on individuals' earnings.

This provides a total annual net direct impact from direct taxes in scenario 1 in the third year of [redacted]

6.2 Indirect Upstream impacts

Indirect upstream impacts are those economic impacts which are not generated directly by FMPG, but occur in the supply chain, through direct suppliers or sub-contractors that provide the shipyard with goods and services.

The total annual net indirect upstream economic impact in scenario 1 in the third year is [redacted]

Suppliers

In this scenario, supplier spending has been scaled down from [redacted], leading to a net output impact of [redacted]. As explained in section 5.2, foregone supplier spending has been re-introduced at the rate of re-employment for those aged 16-54 to a maximum cap of [redacted] after 3 years.

The indirect supplier impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of material supplier to the total spend in that material category in Scotland in the third year modelled and subtracting this from the indirect supplier GVA in the base case.

This provides a total annual net indirect upstream economic impact from suppliers in scenario 1 in the third year of [redacted].

Sub-contractors

In this scenario, sub-contractor spending has been scaled down from [redacted], leading to a net output impact of [redacted]. As explained in section 5.2, foregone sub-contractor spend has been re-introduced at the rate of re-employment for those aged 16-54 to a maximum cap of [redacted] after three years.

The indirect sub-contractor impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of sub-contractor activities to the total spend in that material category in Scotland in the third year modelled and subtracting this from the indirect sub-contractor GVA in the base case.

This provides a total annual net indirect upstream economic impact from sub-contractors in scenario 1 in the third year of [redacted].

6.3 Induced upstream impacts

Induced upstream impacts are those economic impacts which are not generated directly by FMPG, but occur through the employees of businesses in the supply chain, e.g. direct suppliers or sub-contractors spending their wages in the local economy.

The total annual net induced upstream economic impact in scenario 1 in the third year is [redacted]

For all induced upstream impacts, the number of jobs created is not considered as part of this assessment.

Suppliers

The induced supplier impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by the relevant industry of material suppliers to the total spend in that material category in Scotland in the third year modelled and subtracting this from the induced supplier GVA in the base case.

This provides a total annual net induced upstream economic impact from suppliers in scenario 1 in the third year of [redacted].

Sub-contractors

The induced sub-contractor impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by relevant industry of sub-contractor activities to the total spend in that material category in Scotland in the third year modelled and subtracting this from the induced sub-contractor GVA in the base case.

This provides a total annual net induced upstream economic impact from sub-contractors in scenario 1 in the third year of [redacted].

6.4 Induced Downstream

Induced downstream impacts are those economic impacts which are generated by FMPG, employees spending their wages in the local economy.

The total annual net induced downstream economic impact in scenario 1 in the third year is [redacted]

The induced downstream impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) for 'other transport equipment' to the total direct GVA in the third year and subtracting this from the induced downstream GVA in the base case.

In this scenario, it is assumed no local shops or businesses are closed.

6.5 The total net economic impact in scenario 1

Overall, the total net economic impact in the third year of scenario 1, the reduced output is [redacted]

Figure 24: GVA impact in scenario 1 over time

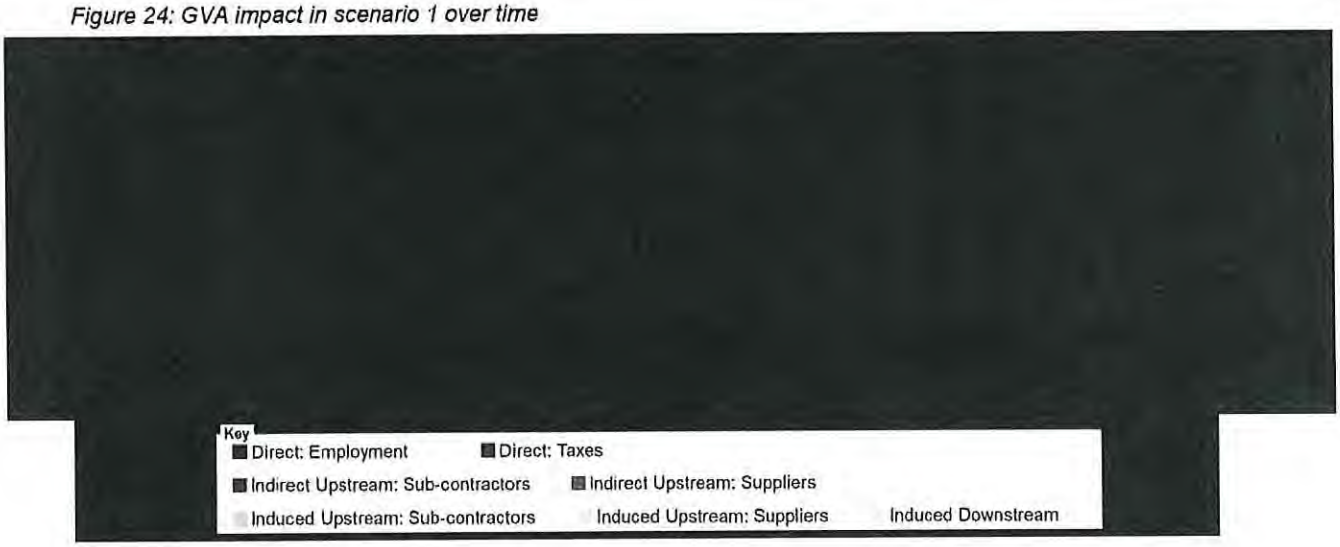


Table 13: Annual net economic impact in scenario 1 in the third year

	Component	Annual GVA	Description
Direct	Employment	[redacted]	Net impact from the change in total costs paid to the total [redacted] employees (including gross salary, car allowance, pensions etc.) between the base case and the scenario
Direct	Taxes	[redacted]	Net impact from the change in total taxes paid to the Scottish government between the base case and the scenario
Indirect	Sub-contractors	[redacted]	Net impact of sub-contractor's supply chain spend between the base case and the scenario
Indirect	Suppliers	[redacted]	Net impact of supplier supply chain spend between the base case and the scenario
Induced	Sub-contractors	[redacted]	Net impact of sub-contractor's employees spend between the base case and the scenario
Induced	Suppliers	[redacted]	Net impact of suppliers employees spend between the base case and the scenario

	Downstream	[redacted]	Net impact of the change in sending of FMPG employees and ex-employees between the base case and the scenario
	Total	[redacted]	

Source: Teneo analysis

The largest driver of net economic impact is the fall in employee costs, driven primarily by a high proportion of the labour force retiring, [redacted] The net employment economic impact does not consider the pension earned by those that retire, nor does it consider the benefits earned by those that remain unemployed.

The second largest driver of net economic impact is the induced downstream impact, which is primarily driven by the reduction in direct economic impacts including employees being laid off, lost spending on overheads, sub-contractors and suppliers and reduced tax earnings. This is likely to have a negative impact on the local economy, with less spending expected, particularly by those that have not found re-employment and those that have had to move into lower paid jobs e.g. in services.

7 Net economic impact in scenario 2

This section assesses the net economic impact of closing the shipyard from the base case over a three-year period across each of the following areas:

- Direct impact;
- Indirect upstream;
- Induced upstream and;
- Induced downstream,

The overall change in GVA between the base case and the scenario in the third year is the net economic impact. In this scenario, as the shipyard is closed, all GVA generated in the base case is assumed to be foregone, and therefore the assessment is based on what foregone revenue is introduced by the third-year post-closure.

7.1 Direct Impacts

The total annual net direct economic impact in scenario 2 in the third year is [redacted]

Employment

In this scenario, as [redacted] the net economic impact of this is [redacted] per annum.

By applying the re-employment assumptions found in Table 10 and Table 11, to the [redacted] staff laid off in this scenario, it is calculated that by the end of the third year modelled, [redacted] staff have retired, [redacted] have been re-employed [redacted] and [redacted] remain unemployed. By applying the average manufacturing and services salaries by age cohort and to those that are re-employed and adding on additional costs, including car allowance, shift allowance, overtime and pension, the total cost of these individuals being re-employed can be calculated. In the third year, this led to a GVA of [redacted] being added back into the economy.

Figure 25. Split of post-closure labour flows in scenario 2

Economic impact assessments do not include pensions for those individuals that take retirement rather than re-entering the workforce, and for this reason, these pensions are not-reintroduced back into the net GVA position. However, it should be noted that [redacted] members of staff that have retired will still be earning, and many are likely to be on final salary pensions.

Furthermore, economic impact assessments do not include benefit payments as this is considered a transfer of payments between the government and households; however, in the third year, the total benefits payments would equate to [redacted] for those [redacted] individuals unemployed.

This provides a total annual net economic impact from direct employment in scenario 2 in the third year of [redacted].

Taxes

National insurance taxation paid by FMPG has been subtracted base case as there are no longer any employees at the shipyard, as have business rates due to the yard no longer being in operation. As income tax is included in the employment net impact figures above, this number is also not included here to avoid double counting.

The national insurance of those individuals being re-employed has been calculated based on individuals' earnings.

This provides a total annual net economic impact from direct taxes in scenario 2 in the third year of [redacted].

7.2 Indirect Upstream impacts

Indirect upstream impacts are those economic impacts which are not generated directly by FMPG, but occur in the supply chain, through direct suppliers or sub-contractors that provide the shipyard with goods and services.

The total annual net indirect upstream economic impact in scenario 2 in the third year is [redacted]

Suppliers

In this scenario, supplier spending by FMPG has been reduced to zero upon closure. As explained in section 5.2, foregone supplier spending has been re-introduced at the rate of re-employment for those aged 16-54 to a maximum cap of [redacted].

This provides a total annual net output impact from suppliers in scenario 2 in the third year of [redacted].

The indirect supplier impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of material supplier to the total spend in that material category in Scotland in the third year modelled and subtracting this from the indirect supplier GVA in the base case.

This provides a total annual net indirect upstream economic impact from suppliers in scenario 2 in the third year of [redacted].

Sub-contractors

In this scenario, sub-contractor spending by FMPG has been reduced to zero upon closure. As explained in section 5.2, foregone sub-contractor spend has been re-introduced at the rate of re-employment for those aged 16-54 to a maximum cap of [redacted]

This provides a total annual net output impact from sub-contractors in scenario 2 in the third year of [redacted].

The indirect sub-contractor impact has been calculated by applying the 2019 Scottish Government Type I indirect output multipliers by relevant industry of sub-contractor activities to the total spend in that material category in Scotland in the third year modelled and subtracting this from the indirect sub-contractor GVA in the base case.

This provides a total annual net indirect upstream economic impact from sub-contractors in scenario 2 in the third year of [redacted].

7.3 Induced upstream impacts

Induced upstream impacts are those economic impacts which are not generated directly by FMPG, but occur through the employees of businesses in the supply chain, e.g. direct suppliers or sub-contractors spending their wages in the local economy.

The total annual net induced upstream economic impact in scenario 2 in the third year is [redacted]

For all induced upstream impacts, the number of jobs created is not considered part of this assessment.

Suppliers

The induced supplier impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by the relevant industry of material supplier to the total spend in that material category in Scotland in the third year modelled and subtracting this from the induced supplier GVA in the base case.

This provides a total annual net induced upstream economic impact from suppliers in scenario 2 in the third year of [redacted].

Sub-contractors

The induced sub-contractor impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) by relevant industry of sub-contractor activities to the total spend in that material category in Scotland in the third year modelled and subtracting this from the induced sub-contractor GVA in the base case.

This provides a total annual net induced upstream economic impact from sub-contractors in scenario 2 in the third year of [redacted]

7.4 Induced Downstream

Induced downstream impacts are those economic impacts which are generated by FMPG, employees spending their wages in the local economy.

The total annual net induced downstream economic impact in scenario 2 in the third year is [redacted]

The first part of the induced downstream impact has been calculated by applying the 2019 Scottish Government Type II output multipliers subtracted by the Type I output multipliers (to isolate the induced impact) for 'other transport equipment' to the total direct GVA in the third year. This provides a total annual GVA of [redacted].

In the second stage of this, all shops and businesses in the local area were assessed to understand how the local area would be impacted. It has been estimated that the number of employees in Port Glasgow equals c.3k.

[redacted]

Figure 26. [redacted]

[redacted]

This provides a total annual net induced downstream economic impact in scenario 2 in the third year of [redacted]. By subtracting the induced downstream economic impact lost from the base case of [redacted], the total induced downstream net economic impact is [redacted].

7.5 The total net economic impact in the scenario

Overall, the total net economic impact in the third year of scenario 2, closure is [redacted]

Figure 27: GVA impact scenario 2 over time

[redacted]

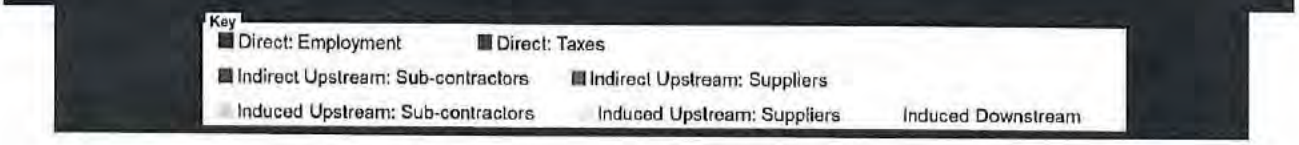


Table 14: Annual net economic impact in scenario 2 in the third year

	Component	Annual GVA	Description
Direct	Employment	[redacted]	Net impact from the change in total costs paid to the total [redacted] employees (including gross salary, car allowance, pensions etc.) between the base case and the scenario
Direct	Taxes	[redacted]	Net impact from the change in total taxes paid to the Scottish government between the base case and the scenario
Indirect	Sub-contractors	[redacted]	Net impact of sub-contractor's supply chain spend between the base case and the scenario
Indirect	Suppliers	[redacted]	Net impact of supplier supply chain spend between the base case and the scenario
Induced	Sub-contractors	[redacted]	Net impact of sub-contractor's employees spend between the base case and the scenario
Induced	Suppliers	[redacted]	Net impact of suppliers employees spend between the base case and the scenario
Induced	Downstream	[redacted]	Net impact of the change in sending of FMPG employees and ex-employees between the base case and the scenario
	Total	[redacted]	

Source: Teneo analysis

[redacted]

The other largest driver of net economic impact is the direct employment impact, which is primarily driven by the large number of people retiring in this scenario within three years of [redacted]. As stated previously, the pension earned from those individuals retiring is not considered in an economic impact assessment as this is considered an early payment on money that was always going to be accessed. It also does not consider the benefits [redacted]

Teneo

Appendix A: Current state data tables

Table 15. Current state breakdown of employee costs

Employee-related costs	Amount (£)
Gross salary	[redacted]
Car allowance	
Shift allowance	
Overtime	
Pension	
Temporary	
Total	**£15,817,746**

Source: '801&2 2022 09 13 GDC FM(PG) Ltd P4 Jul-22 Actuals and F'cast 2023 and 2024 - Teneo.xlsx' and 'Request 7 Employees updated 23 Nov' provided by FMPG and Teneo analysis

Table 16. Current state breakdown of tax

National Insurance	Amount (£)
National insurance	[redacted]
Business rates	
Total	

Source: '801&2 2022 09 13 GDC FM(PG) Ltd P4 Jul-22 Actuals and F'cast 2023 and 2024 - Teneo.xlsx' and 'Request 7 Employees updated 23 Nov' provided by FMPG and Teneo analysis