



Annex

A21.01 Deliverability

December 2019

As a part of the NGGT Business Plan Submission

nationalgrid

1. Introduction

Our Portfolio Planning team has conducted a detailed plan deliverability exercise using the principles defined in Chapter 21 of the business plan. As the result of deliverability assessment we have developed long term (10 – year) outage programme to facilitate delivery of our overall investment programme. This is first time we have detail long term view spanning over multiple regulatory periods.

The analysis shows that the currently proposed plan with a significant step up in workload between RIIO-1 and RIIO-2 is deliverable. Proposed RIIO-2 and RIIO-3 plan has been developed working across the System Operator, Delivery Units, Operations and other key business stakeholders.

Our priority outages were based on our key compliance requirements such as our emission programme (MCP, LCP, etc), control systems including cyber work and ILI Runs/DIGs Having identified our key outages, additional planned work across various asset types has been bundled and aligned with those outages to maximise efficiencies whilst minimising disruption to our customers activities. This may result in working on multiple assets and/or sites simultaneously.

The NTS diagrams below (Section 2.3) are an output from the planning exercise and indicate key network access requirements by year for both RIIO-2 and RIIO-3 periods in order to efficiently deliver our plan whilst minimising disruption to our customers activities.

Our planning cycle is a continuous process, thus, our plan will continue to be refreshed in the lead up to and throughout the RIIO-2 period to reflect any future change and manage risks.

2. Outage visualisations

2.1 Summary of planning prioritisation by work type detailed below

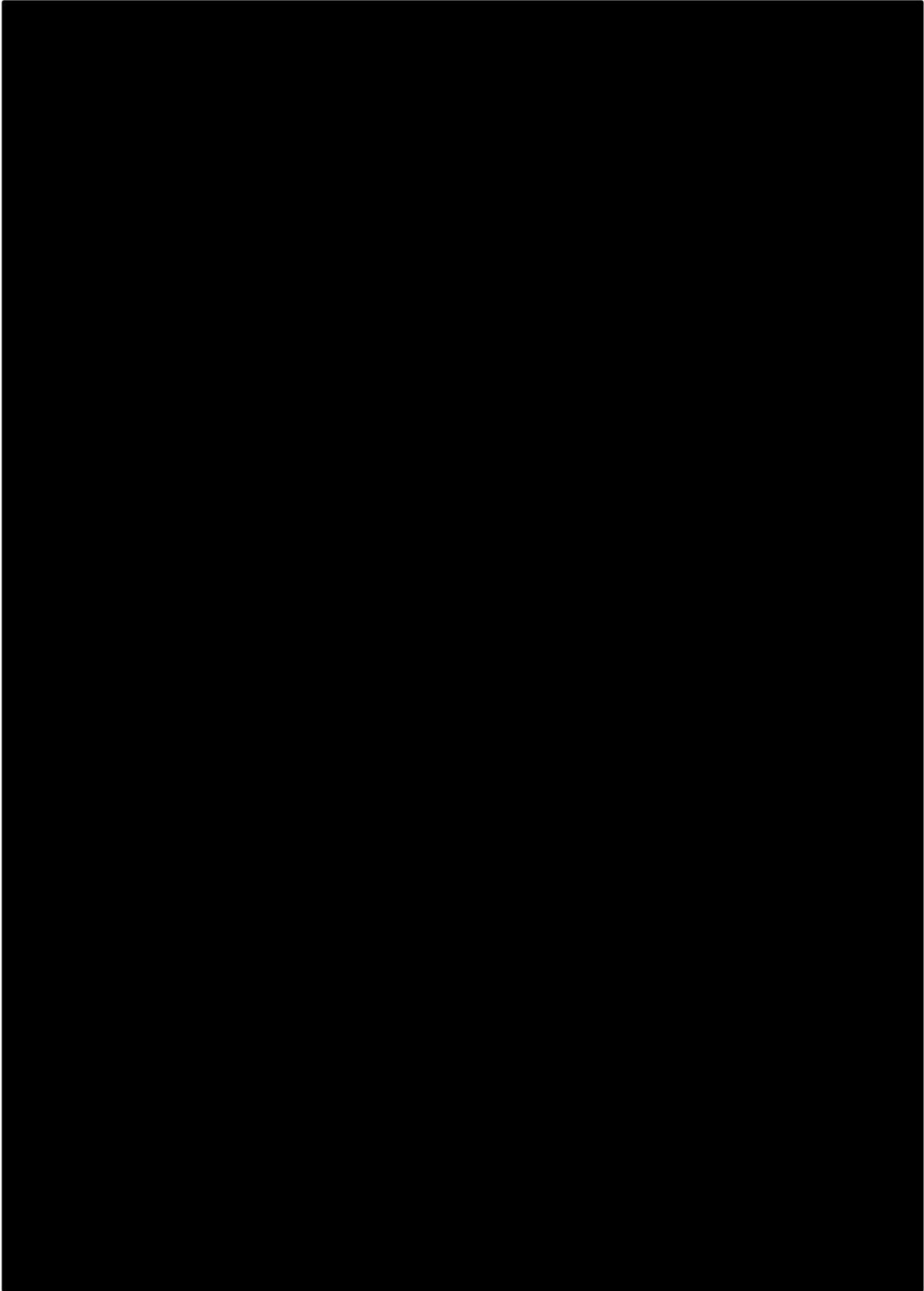
Outage Type	Priority planning outages	Secondary outages and non-outage work
Feeder	ILI Runs, ILI digs	Plant & Equipment, Valves, GQMT, Pipeline, etc
Station/Unit	MCP, LCP, Control Systems inc Cyber	Electrical, Plant & Equipment, Redundant Assets, Cab Infrastructure, Compressors, Valves, Redundant Assets, GQMT, Civils, GQMT, etc

2.2 Example of our typical high-level site outage overview

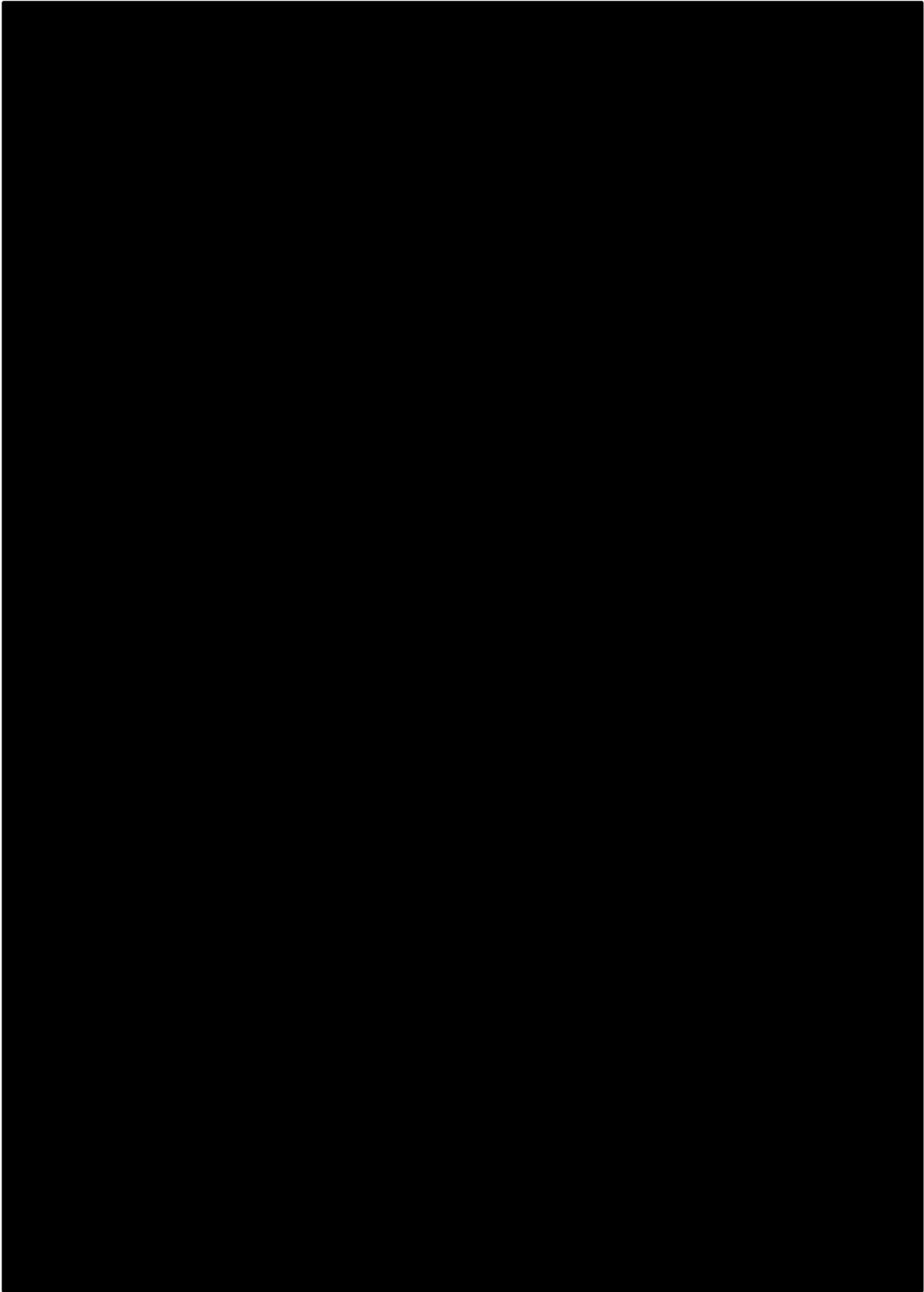
Example Year					
Feeder	From site	To Site	Outage type	Priority Outage work	Other Outage work
4	Audley	Alrewas	PR	Ili Digs	CP Defects, IJ's, CM4
21	Mickle Trafford	Deeside PS	PR	Ili Digs	CP Defects, IJ's, CM4
4	Shangton	Tur Langton	PR	Ili Digs	CP Defects, IJ's, CM4
18	Tilbury Thames North	Gravesend Thames South	PR	Ili Run	
14	Pucklechurch	Seabank	PR	Ili Digs	CP Defects, IJ's, CM4
14	Seabank	-	Feeder outage		Valve outages
14	Tockington	-	Feeder outage		> Valve outages
14	Tormarton	-	PR		CP Defects, IJ's, CM4
14	Ilchester	Barrington	-	> Ili Run	
14	Barrington	Kenn South	PR	Ili Digs	CP Defects, IJ's, CM4
	St Fergus		Station Outage	Control System	Compressor Train, Redundant Assets, Cab Infrastructure
	Kirriemuir Unit A/C		Unit Outage	Control System	Compressor Train, Redundant Assets, Cab Infrastructure
	Bishop Auckland Unit A/B		Unit Outages		Compressor Train
	Hatton & Unit A/B		Unit Outage	Control System	Compressor Train, Valves
	Wisbech Unit B, Condensate Tank		Unit Outage	Control System	Compressor Train & Redundant Assets

2.3 The initial 10 year annual outage plan for RIIO-2 and RIIO-3 has been reflected on NTS maps.

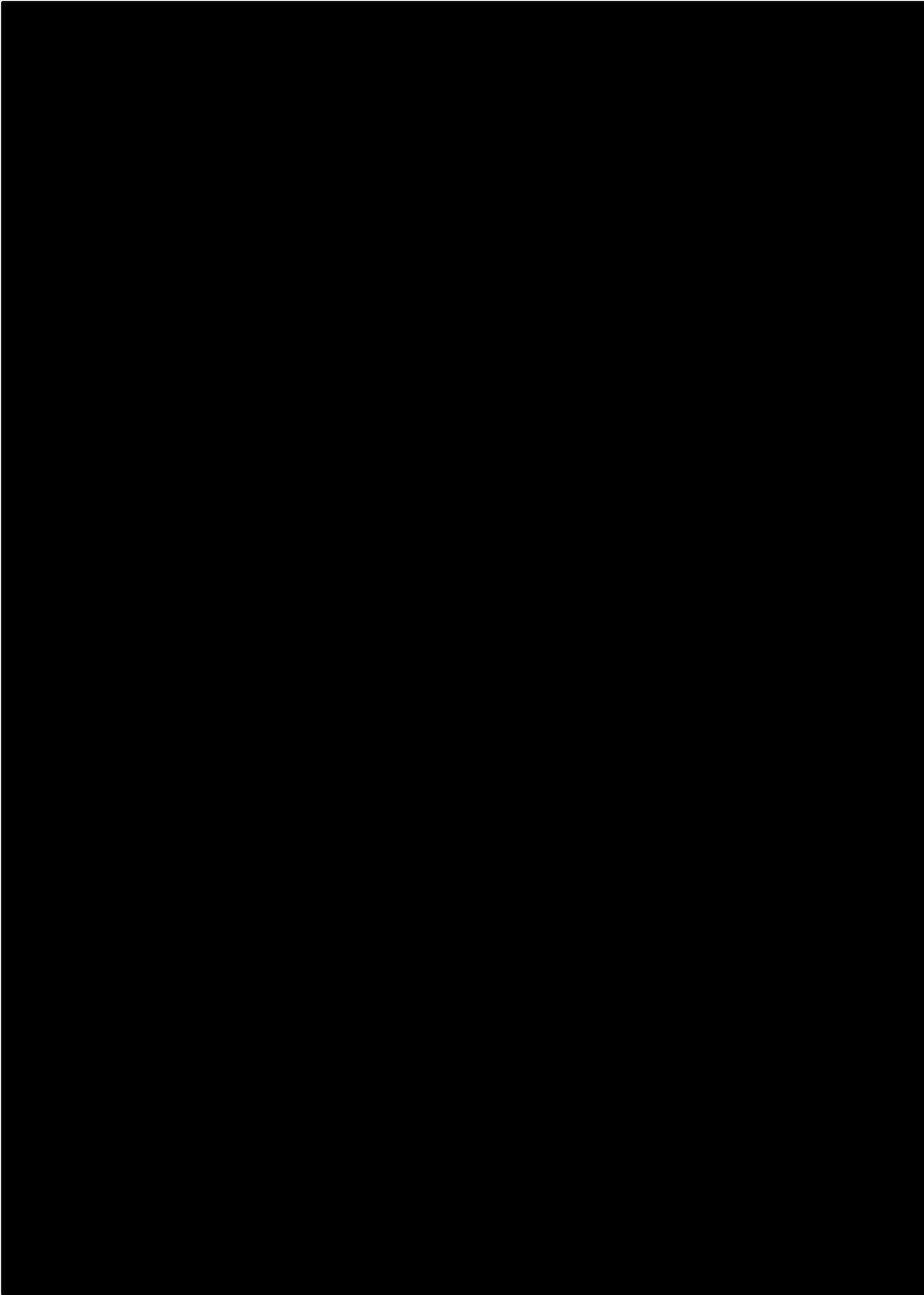
RIIO-2 – Year 1



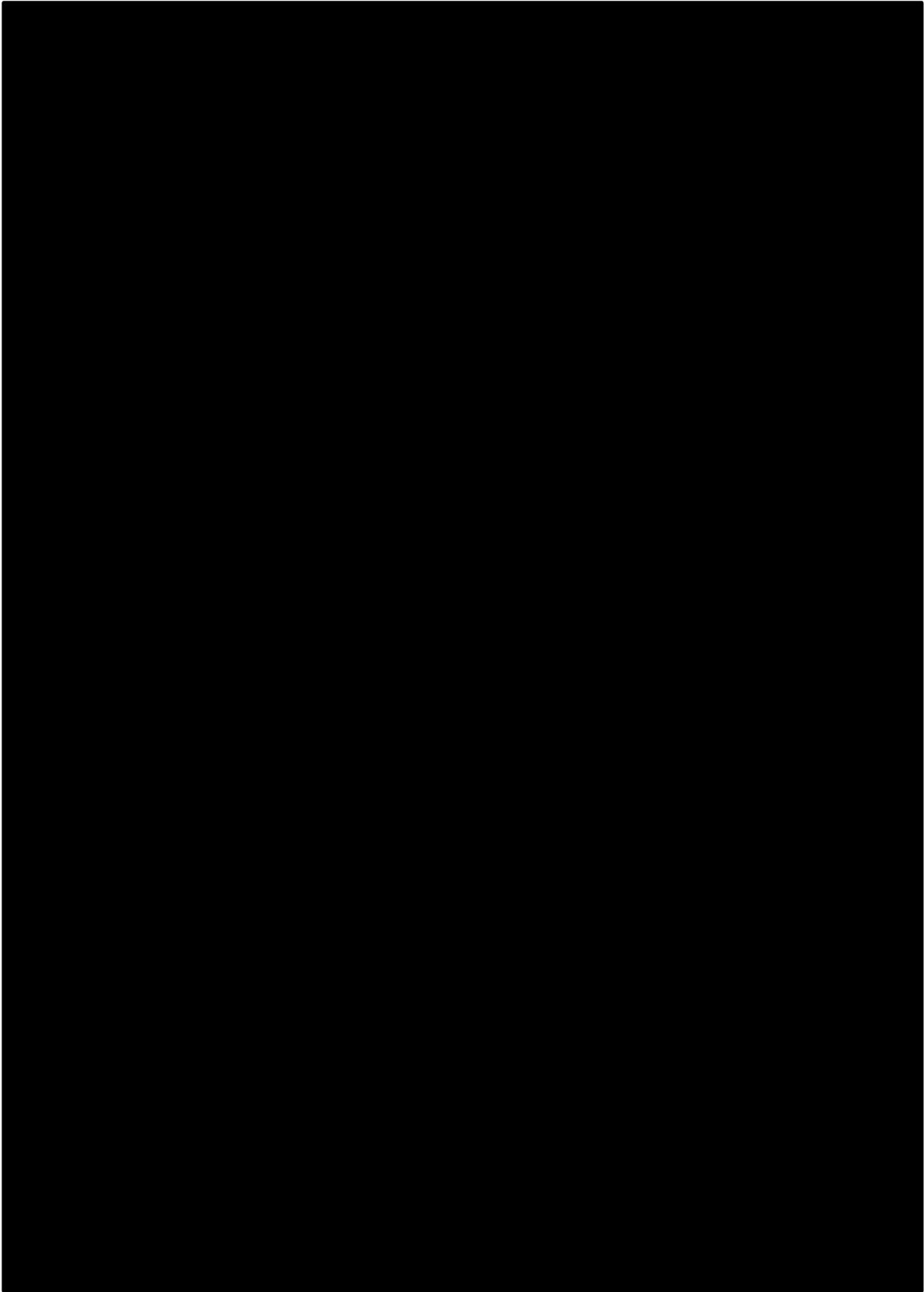
RIIO-2 – Year 2



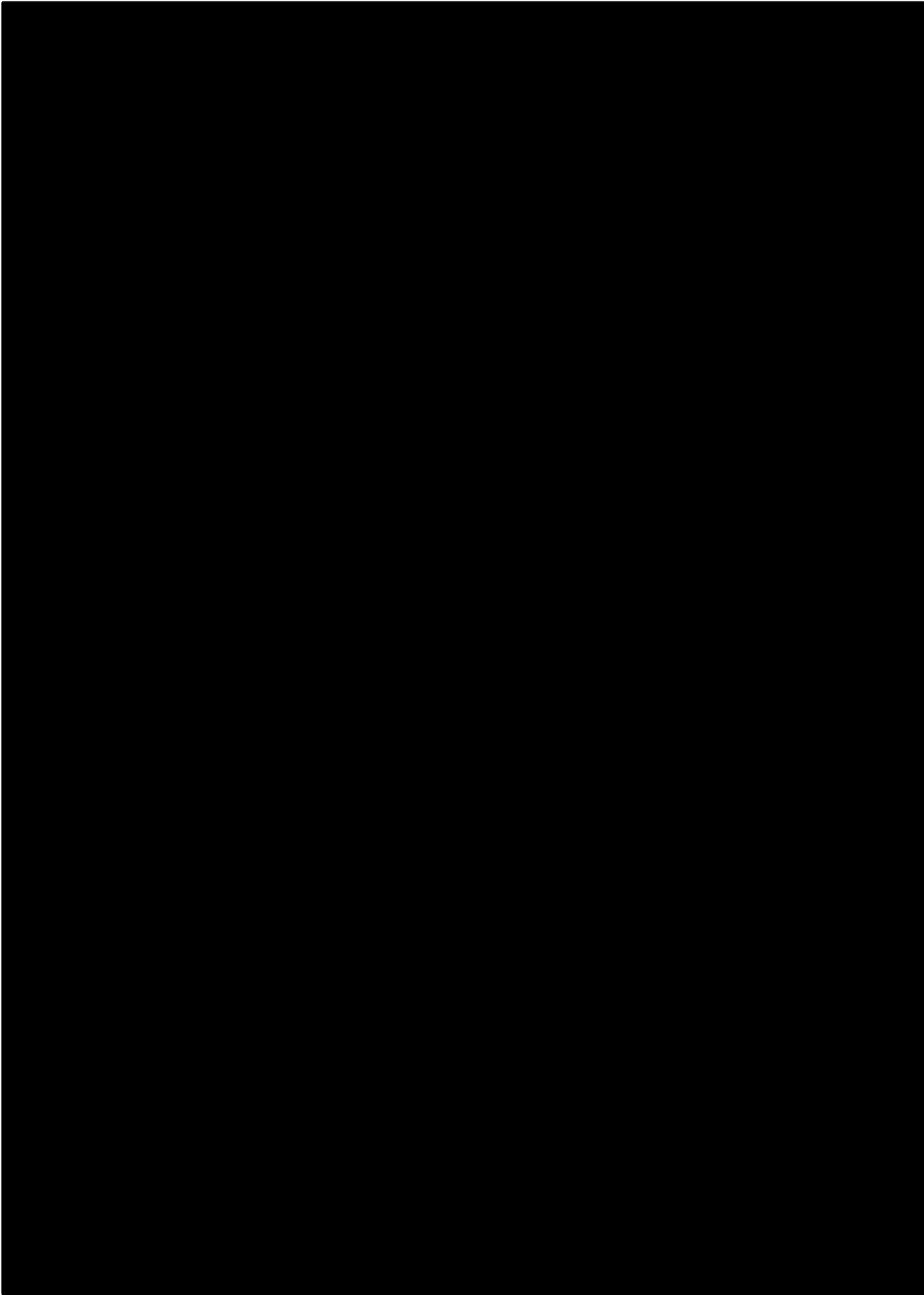
RIO-2 – Year 3



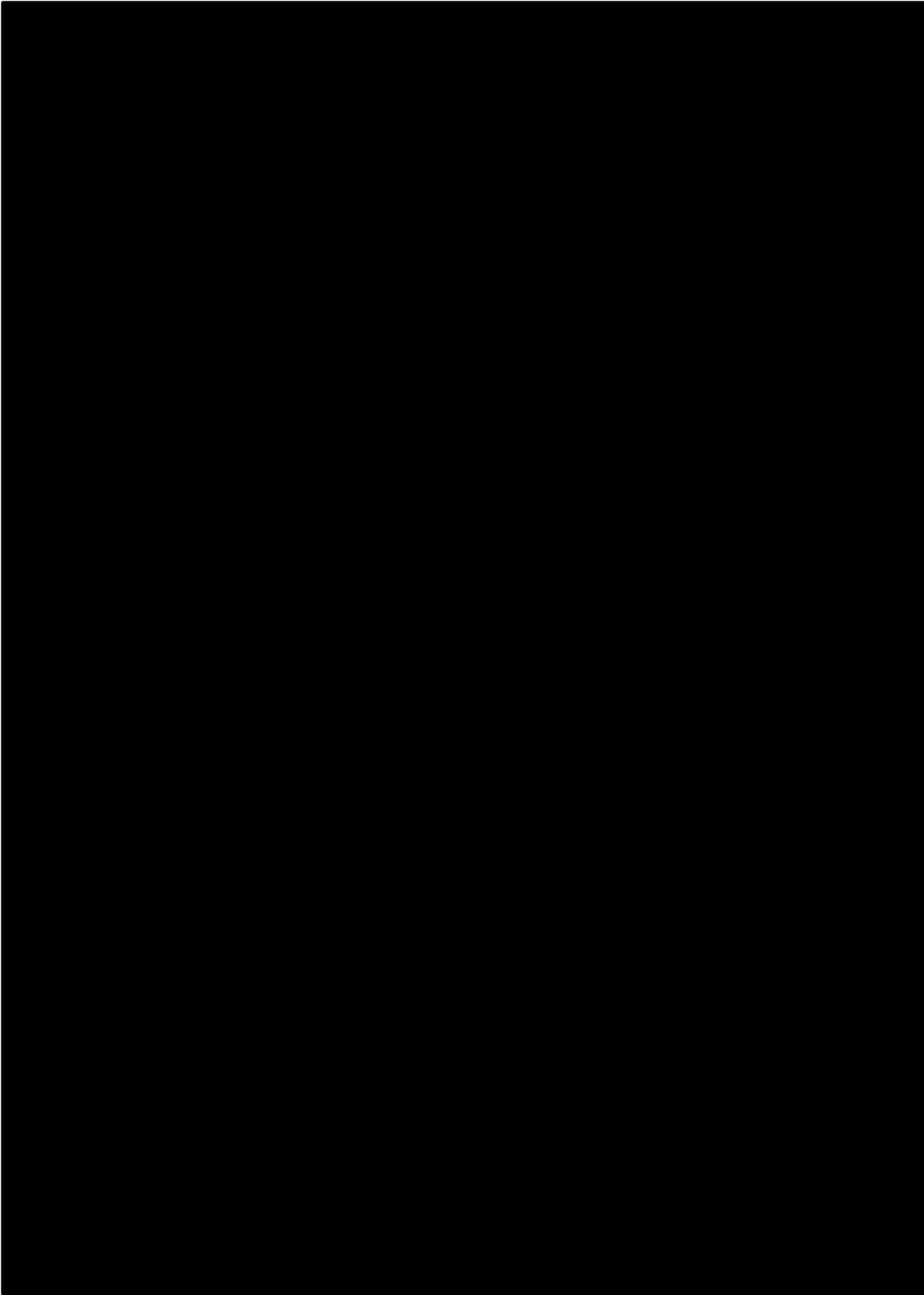
RIIO-2 – Year 4



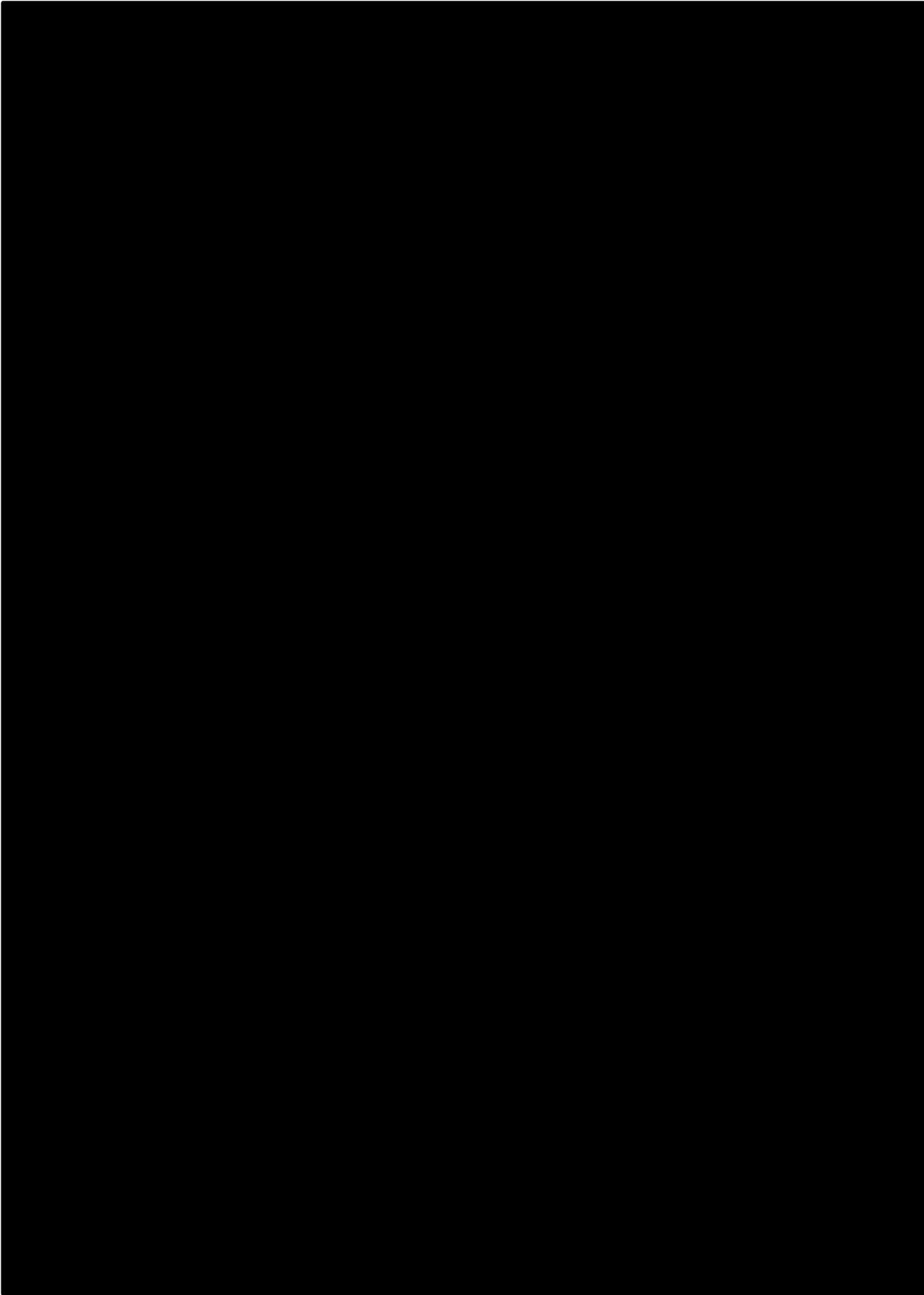
RIIO-2 – Year 5



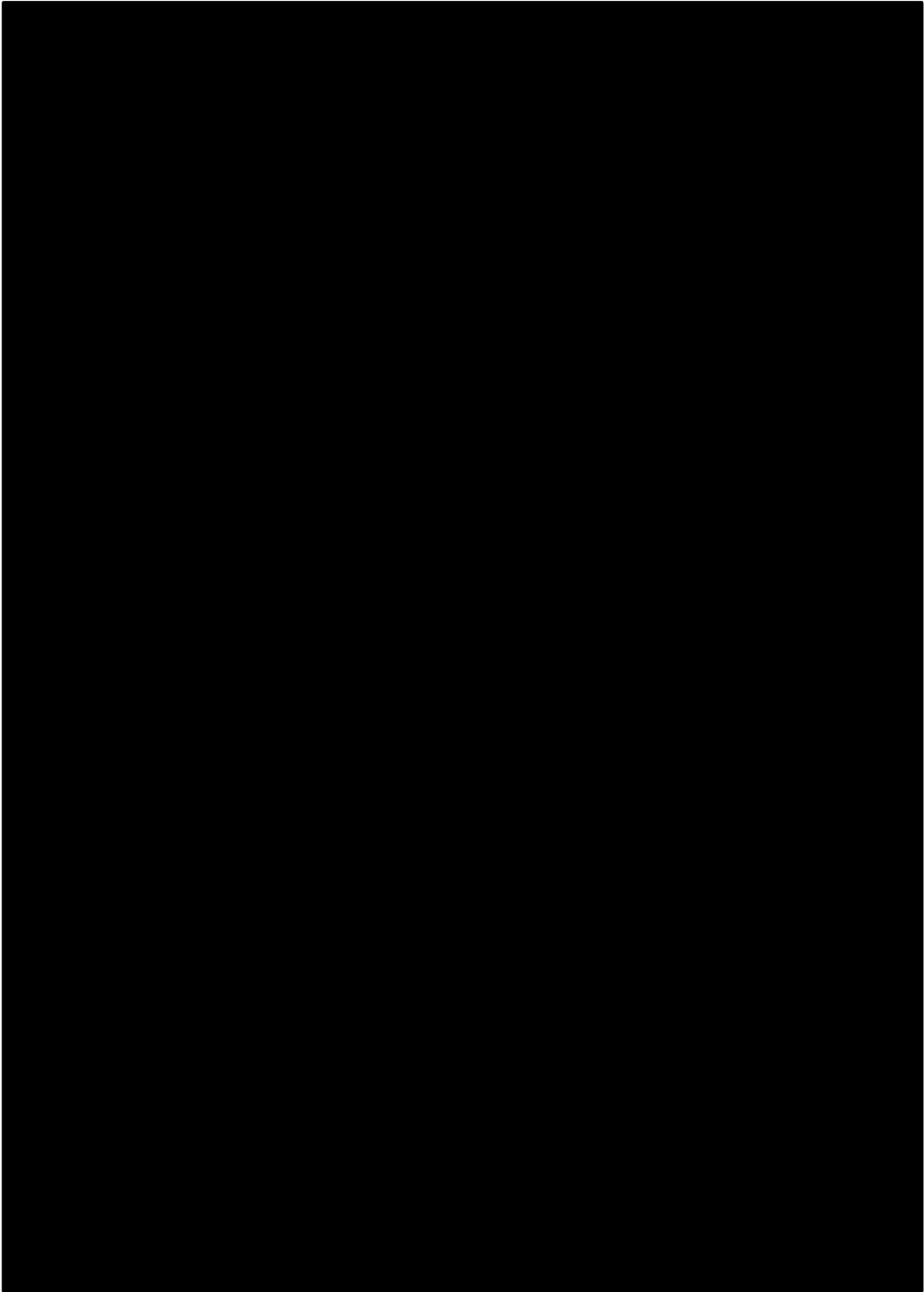
RIIO-3 – Year 1



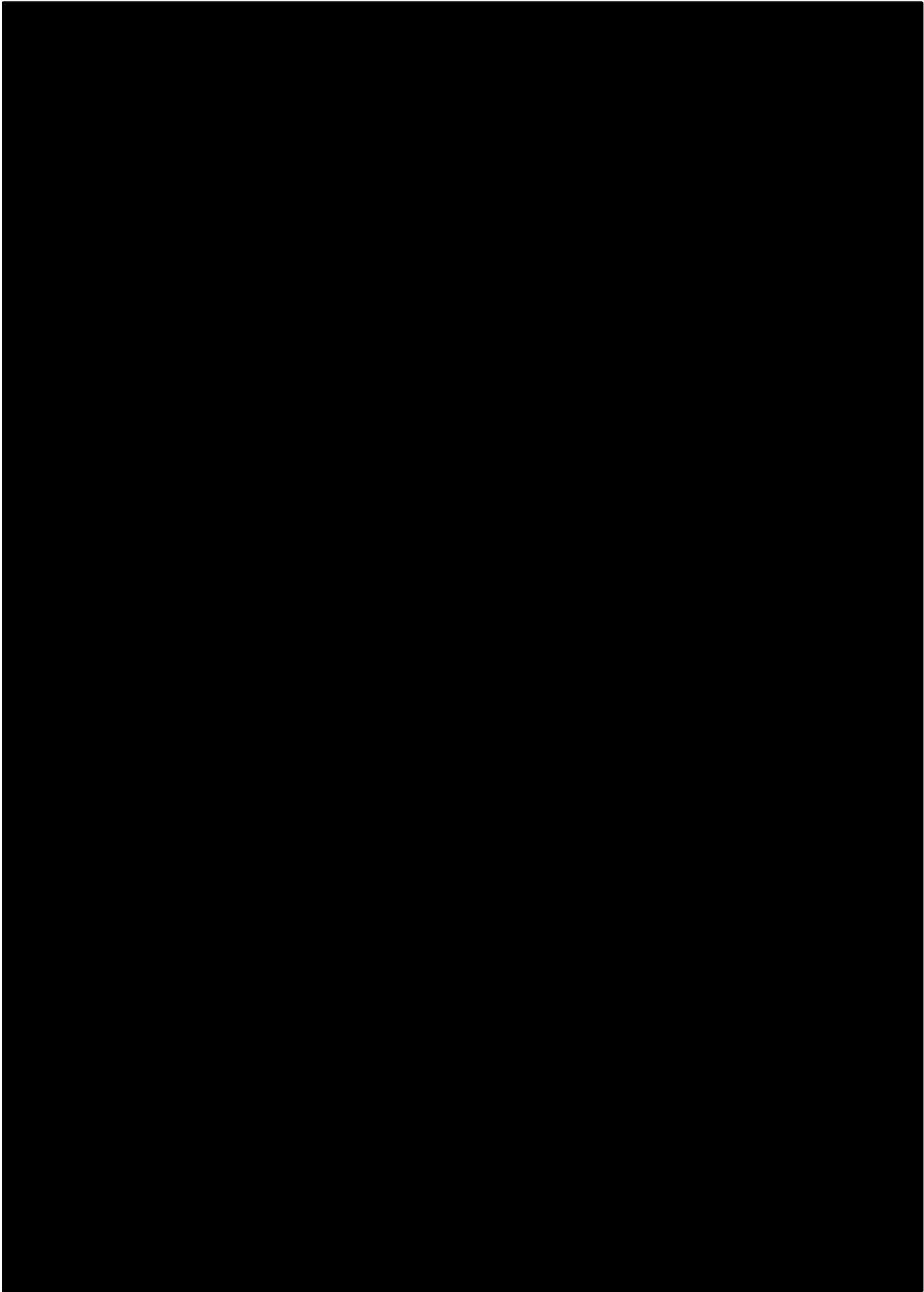
RIO-3 – Year 2



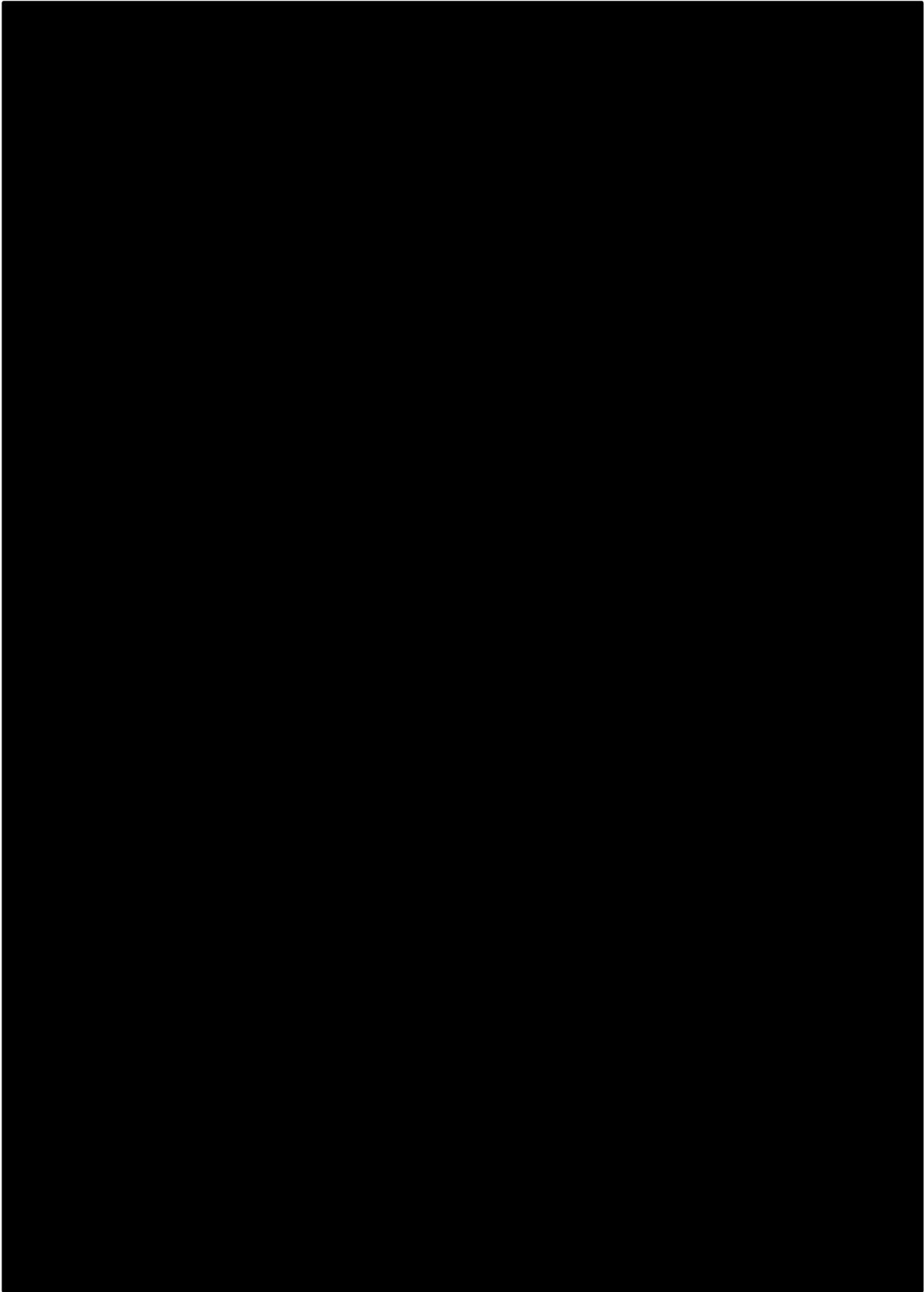
RIIO-3 – Year 3



RIIO-3 – Year 4



RIIO-3 – Year 5



3. Deliverability risks

Our deliverability assessment on the planned works proposed for completion during both RIIO-2 and RIIO-3 has concentrated on ensuring we minimise outages of our assets by bundling multiple types of non-conflicting activities. This ensures that the majority of planned work can be completed at a lower cost, with reduced network risk and minimum consumer impact.

For all planned outages, we have assessed their impact on network capability and where there is the potential for the work to impact on customers we have either considered this as part of our constraint management incentive, or alternatively, we have considered engineering solutions (including stopple and bypass arrangements). The engineering solutions have been costed and included in our business plan and relate to those specific areas of the network where there is a clear impact due to our customers' geographic location on single feed points of supply. These are anticipated to be applied at 13 discrete locations and will provide the flexibility of access far into the future post the RIIO-3 period.

Our deliverability plan will be subject to regular review where we will continue to assess efficiency and exploit opportunities to optimise.

This is assuming we will be funded as per the business plan for planned maintenance activities and that a Constraint Management Incentive scheme is in place that sufficiently funds our constraint risk management. This maintenance plan is included as part of our network capability assessments and therefore ultimately within our constraint management scheme proposal. The engineering solutions referenced above and below have minimised the impact of planned maintenance on our proposed constraint management scheme.

Risk description	Countermeasure	RIIO-2 (No. isolation risks)	RIIO-3 (No. isolation risks)	Comments
<p><i>Entry point risks –</i></p> <p>Work that requires the total isolation of an Entry points</p>	<p>To avoid the necessity of isolating our customers we will pursue options to bypass our assets requiring maintenance thereby maintaining terminal capability. The anticipated cost of such a physical solution is significantly less than associated cost of Entry Capacity constraint management and will provide an ongoing benefit to our customers by increasing flexibility of access in future years.</p>	3	3	<p>Whilst there was no work in RIIO-1 that required full isolation of an entry point, there were several smaller entry point risks that required contractual arrangements to be in place and/or additional flexibility built into third party maintenance contracts at a cost.</p>

<p><i>Very Large Daily Metered Customers</i> – Work that would lead to an impact to directly connected customers. Could lead to significant financial and operational impacts.</p>	<p>We will continue to work with impacted parties to align any customer outage work where possible. If this is not possible then we will work to identify the most cost-effective method of deliver the work in the best interests of consumers; either by a commercial or physical solution.</p> <p>As the network ages beyond its design life the level of this work has increased by at least twice as much when compared to RIIO-1</p>	<p>31</p>	<p>29</p>	<p>In RIIO-1 we worked with all our connected parties to identify opportunities to complete work without impacting their operations. When this was not possible we employed either a commercial or physical solution.</p>
<p><i>Distribution Networks-</i> Failure to provide distribution networks with gas in accordance with their requirements, risking gas supply shortages to local and domestic supplies.</p>	<p>We work closely with the Gas Distribution Networks with an aim of completing work side by side without overtly impacting their operations and vice versa. The remaining risks are situations where flow swaps are not available and the work would result in domestic customers being isolated, for this work physical solutions are being pursued of a similar nature to those described for our impacted supply sites.</p>	<p>3</p>	<p>4</p>	

Note: The table only displays those risks which would otherwise require full customer isolations.