

- (vii) include evidence of any Approvals that Macquarie is required to obtain for the design and construction of the Project Works and the Temporary Works;
  - (viii) include an engineering assurance register in .RIF format or IBM® Rational® DOORS® native archive with baselines format;
  - (ix) include an independent security audit of the overall systems security;
  - (x) include a safety assurance statement;
  - (xi) include any other Design Stage 3 design submission requirements described in the Appendices;
  - (xii) be of a quality and content to permit the Design Stage 3 design package Design Documentation to support application to the Sydney Metro CCB/Sydney Metro Sub-CCB control gate 3 for approval of the proposed configuration change;
  - (xiii) be fully complete, correct, detailed and co-ordinated;
  - (xiv) be fully co-ordinated with Rail Contractors' Work;
  - (xv) have any residual risks arising out of the design, operation and ongoing maintenance of the asset agreed with OpCo, Existing Operators, Independent Certifier and the Principal's Representative;
  - (xvi) include the "initial draft version" of the Asset Management Information;
  - (xvii) include updated prototypes and samples;
  - (xviii) include an updated and final BCA Report;
  - (xix) include an updated version of each of the Design Documents requested in Design Stage 2;
  - (xx) be consistent with, and incorporate the development of design packages submitted in the Design Stage 2 submissions; and
  - (xxi) include endorsement of the Design Review Panel.
- (b) The Design Stage 3 Design Documentation for each discrete design component, part or element must include a durability assessment report that:
- (i) identifies the exposure conditions expected to be encountered by the discrete design component, part or element, including severity of the soil and groundwater conditions and the environment within tunnels, caverns, access and ventilation shafts;
  - (ii) includes available soil and groundwater test results;
  - (iii) describes the expected and assumed degradation and corrosion processes associated with the environments to be encountered by the discrete design component, part or element;
  - (iv) identifies the durability requirements and the performance criteria applicable to the discrete design component, part or element;

- (v) details any design work undertaken by or on behalf of Macquarie in respect of the discrete design element component, part or element;
  - (vi) summarises the Design Stages and reviews and includes responses to all previous review comments provided in relation to durability issues;
  - (vii) includes copies of all certificates issued by the Independent Certifier in accordance with the deed in relation to the discrete design element component, part or element;
  - (viii) identifies the critical durability issues with respect to construction of the discrete design element, component, part or element;
  - (ix) identifies the inspection/monitoring and maintenance requirements in the construction and operation of the discrete design element component, part or element to achieve the durability requirements; and
  - (x) includes any other information that the Principal's Representative may reasonably request.
- (c) At least one hard copy of all Design Stage 3 Design Documentation that has been certified by the Independent Certifier must be kept on the Construction Site relevant to the Design Documentation and made available for inspection by the Principal's Representative and the Independent Certifier during the construction of the Project Works and Temporary Works.
- (d) All Design Documentation that is amended after being certified by the Independent Certifier and any additional Design Documentation related to the design package that is required for construction purposes, must be submitted for Design Stage 3 design review in accordance with clause 20.8 of the deed.

#### **6.4.7 Additional submissions**

- (a) In addition to the Design Documentation at Design Stage 1, Design Stage 2 and Design Stage 3, Macquarie must submit the following submissions for review at the frequency requested by the Principal Representative:
- (i) safety assurance report;
  - (ii) systems assurance report;
  - (iii) engineering assurance register;
  - (iv) project safety hazard log;
  - (v) human factors assurance report;
  - (vi) sustainability and environment report;
  - (vii) noise and vibration report;
  - (viii) durability report;
  - (ix) RAM analysis reports; and
  - (x) RAM verification and validation reports.
- (b) Macquarie must produce “for construction” drawings which comply with the requirements of clause 20.11 of the deed and must ensure at least two bound

copies are kept on the Construction Site and made available for inspection by the Principal's Representative and the Independent Certifier during construction.

#### 6.4.8 General requirements for Design Documentation

- (a) All Design Documentation must be in English and in metric units.
- (b) Macquarie must provide any necessary translations of supporting documentation at the time of submission of the Design Documentation.
- (c) Macquarie must provide two printed copies and one electronic copy of the Design Documentation to each of the Principal's Representative and the Independent Certifier.
- (d) Macquarie must provide copies of referenced standards, if required by the Independent Certifier or the Principal's Representative.
- (e) The Design Documentation must include:
  - (i) *drawings*: a complete set of design, interface, combined services, structural, electrical, mechanical, construction and manufacturing drawings. Macquarie must deliver:
    - A. all drawings in the original size. Irrespective of the original size of drawings, and unless otherwise agreed by the Principal's Representative, the electronic copy must be capable of generating legible prints when reduced to A3 size;
    - B. a drawing index for each set of drawings. The drawing index must itself form the first drawing in the series; and
    - C. all drawings must comply with the Sydney Metro CAD/GIS/BIM Manual that is identified in Appendix 57.
  - (ii) *specifications*: specifications prepared as part of Macquarie's Activities or necessary for full understanding of the drawing requirements, such as product or procurement specifications;
  - (iii) *test specifications*: all test specifications required to construct, manufacture or commission the Project Works or Temporary Works;
  - (iv) *calculations*: calculations necessary to support the design proposals;
  - (v) *computer analyses and data*: computer analyses and data necessary to support the design proposals, which must be provided in an electronic native format that allows interrogation, manipulation and re-calculation by the Principal's Representative and the Independent Certifier;
  - (vi) *reports*: design reports necessary to understand or interpret the design drawings or other reports specifically identified in the deed;
  - (vii) *software*: software documentation and code developed as part of Macquarie's Activities, and licensed copies of specific software required to read electronic files;
  - (viii) *samples*: samples, prototypes and assemblies for testing and quality review;

- (ix) *Subcontractor drawings*: drawings and specifications for Subcontract items which form part of the design of the Project Works or Temporary Works;
- (x) any other information necessary to enable the Principal's Representative and the Independent Certifier to undertake the review of the Design Documentation; and
- (xi) all necessary reporting requirements in accordance with Appendix 53a.

#### **6.4.9 Quality Benchmarks, samples and prototypes**

- (a) Macquarie must design and construct the Project Works to comply with Quality Benchmarks stated in the Appendices in addition to all other requirements of the deed.
- (b) Macquarie must prepare and submit to the Principal's Representative project specific quality samples and prototype installations of all Customer and staff facing aspects of the Martin Place Metro Station as part of the design submission and review process.
- (c) In the event that the Design Documentation includes Customer and staff facing aspects that have not previously been used on the Sydney Metro City & Southwest, Macquarie must prepare and submit to the Principal's Representative evidence of Customer testing of samples and prototypes in accordance with the requirements of the Customer Centred Design Plan.
- (d) The submission requirements for samples and prototypes stated in the Appendices are the minimum submission requirements for samples and prototypes. Macquarie must submit enough quality samples and prototype installations to adequately demonstrate the Quality Benchmarks.
- (e) Macquarie must construct, manufacture or procure and submit prototypes for all Quality Benchmarks stated in the Appendices. The Principal's Representative must be able to approve that the submitted prototype is at least equivalent to the Quality Benchmark prior to Macquarie proceeding with any equivalent permanent work. Once approved by the Principal's Representative, the project specific prototype will become the Quality Benchmark to be achieved in the Project Works.
- (f) All sample and prototype submissions must be:
  - (i) photographed and referenced in the design report relevant to the design package;
  - (ii) accompanied by relevant product data sheets and test certificates;
  - (iii) permanently labelled with the submission details including date and description; and
  - (iv) securely stored by Macquarie in a dedicated facility for the duration of Macquarie's Activities, unless otherwise agreed with the Principal's Representative.

#### **6.4.10 Design Review Panel**

- (a) A Design Review Panel has been established that:

- (i) has been established under the Planning Approval and has obligations in relation to design elements developed under that approval;
  - (ii) has included the Over Station Development in its terms of reference;
  - (iii) has defined responsibilities and scope as defined in the Sydney Metro Design Review Panel Terms of Reference and includes relevant stakeholders to review and provide comment on aspects of the design including architectural, heritage, Customer Centred Design, wayfinding and signage, public art, urban design and landscaping; and
  - (iv) may establish a sub-committee for the purposes of Macquarie's Activities which would be constituted under the Planning Approval as part of the Design Excellence Framework.
- (b) References to Design Review Panel in this SWTC is a reference the Design Review Panel and all sub-committees of the Design Review Panel.
- (c) Macquarie must present presentation materials to the Design Review Panel at the following times:
- (i) as soon as practicable after the date of the deed to allow the Design Review Panel to provide feedback and comments on the proposed approach and guiding design principles; and
  - (ii) monthly through each of Design Stage 1, Design Stage 2 and Design Stage 3 to:
    - A. allow the Design Review Panel to provide comments on the design;
    - B. report on the progress of the design elements identified in section 6.4.10(a);
    - C. demonstrate how the Design Review Panel comments from the previous month have been either incorporated into the design or otherwise addressed; and
    - D. demonstrate how specific planning conditions in the Environmental Documents have been addressed.
- (d) Presentation materials must include appropriate drawings, models, images, renders and other media to adequately express the design outcomes to the audience and must be accompanied by appropriate Design Documentation including prototypes, samples, materials and finishes boards.
- (e) Macquarie must obtain the Principal's Representative's approval to the presentation material prior to presentation to the Design Review Panel.
- (f) Macquarie must submit the proposed presentation material to the Principal's Representative and allow the Principal's Representative 3 Business Days to review and comment on the proposed presentation material.
- (g) Until the Principal's Representative approves the presentation material, Macquarie must continue to update the presentation material to address the Principal's Representative's comments and resubmit to the Principal's Representative.
- (h) Macquarie allow the Principal's Representative a further 3 Business Days to review and comment on each submission of updated presentation material.

- (i) Once approved under section 6.4.10(d), Macquarie must make the presentation materials available for review by the Design Review Panel for at least 5 Business Days prior to presenting the presentation material to the Design Review Panel.
- (j) If prototypes are required, then Macquarie must arrange for the Design Review Panel to be able to view the prototypes prior to the Design Stage 1 and Design Stage 2 submissions.
- (k) All comments provided by the Design Review Panel must be tabulated and appropriate responses provided to the Design Review Panel to close the comments out and facilitate the Design Review Panel's endorsement.
- (l) Macquarie must obtain the Design Review Panel's written endorsement of the Design Documentation at each Design Stage and prior to proceeding to a subsequent Design Stage.
- (m) Subject to the approval of the Principles Representative to the comments made by the Design Review Panel, Macquarie must also comply with any requirements of the Planning Approvals in relation to the Design Review Panel and its membership.

#### **6.4.11 Heritage Working Group**

- (a) the Principal has established a Heritage Working Group that includes relevant stakeholders to review and provide comment on the heritage aspects of the design.
- (b) Macquarie must present the heritage elements of any designs to the Heritage Working Group:
  - (i) as soon as practicable after the date of the deed to allow the Heritage Working Group to provide comments and feedback on the proposed designs that have an interface with any heritage fabric; and
  - (ii) monthly through each of Design Stage 1, Design Stage 2 and Design Stage 3 to:
    - A. allow the Heritage Working Group to provide comments on the design;
    - B. report on the progress of the heritage aspects of the design;
    - C. demonstrate how the Heritage Working Group comments from the previous month have been either incorporated into the design or otherwise addressed; and
    - D. demonstrate how the heritage planning conditions in the Environmental Documents have been addressed.
- (c) Presentation materials must include appropriate drawings, models, images, renders and other media to adequately express the design outcomes to the audience and must be accompanied by appropriate Design Documentation including prototypes, samples, materials and finishes boards.
- (d) Macquarie must obtain the Principal's Representative's approval to the presentation material prior to presentation to the Heritage Working Group.
- (e) Macquarie must submit the proposed presentation material to the Principal's Representative and allow the Principal's Representative 3 Business Days to review and comment on the proposed presentation material.

- (f) Until the Principal's Representative approves the presentation material, Macquarie must continue to update the presentation material to address the Principal's Representative's comments and resubmit to the Principal's Representative.
- (g) Macquarie allow the Principal's Representative a further 3 Business Days to review and comment on each submission of updated presentation material.
- (h) Once approved under section 6.4.11(d), Macquarie must make the presentation materials available for review by the Heritage Working Group for at least 5 Business Days prior to presenting the presentation material to the Heritage Working Group at scheduled Heritage Working Group meetings.
- (i) At the Principal's Representative's absolute discretion, the Principal's Representative may consider a request for a Heritage Working Group meeting in addition to the scheduled meetings, provided Macquarie submits a request for the additional meeting a minimum of 10 Business Days prior to the proposed date of the additional meeting.
- (j) If prototypes are required, then Macquarie must arrange for the Heritage Working Group to be able to view the prototypes prior to the Design Stage 1 and Design Stage 2 submissions.
- (k) All comments provided by the Heritage Working Group must be tabulated and appropriate responses provided to the Heritage Working Group to close the comments out.

#### **6.4.12 Interface design and coordination**

- (a) Macquarie must coordinate the development of the design to ensure that the interfaces with Rail Contractors' Work and Rail Contractor's Activities are accommodated within the design of the Project Works and Temporary Works and so that the Project Works and Temporary Works properly interface and integrate with the Rail Contractors' Work and Rail Contractor's Activities.
- (b) Macquarie must prepare and submit to the Principal's Representative the following interface documentation for the coordination of design and construction activities with Rail Contractors:
  - (i) structural, electrical and mechanical drawings (**SEM**);
  - (ii) combined services drawings (**CSD**);
  - (iii) wall elevation drawings (**WEDs**);
  - (iv) cable containment drawings;
  - (v) cast-in conduit drawings;
  - (vi) architectural builders works and finishes (**ABWF**) drawings;
  - (vii) delivery route drawings (**DRD**);
  - (viii) detailed interface specifications (**DIS**);
  - (ix) detailed interface test plans (**DITP**); and
  - (x) interface test specifications (**ITS**).

- (c) Macquarie must cooperate with the relevant Rail Contractors to develop the interface documentation identified in this section 6.4.12 in accordance with this section 6.4.12 and the CoOperation and Interface Deeds.
- (d) Macquarie must submit the interface documentation identified in this section 6.4.12 to the Principal's Representative and Independent Certifier as Design Documentation for review in accordance with the requirements of the deed and must provide a copy of each to the relevant Rail Contractors in .pdf, native format (e.g. CAD) and hard copy at the same time as the submission to the Principal's Representative.
- (e) As part of each submission for each Design Stage, Macquarie must demonstrate that the Project Works complies with the interface requirements of the SWTC, addresses the physical constraints imposed by the Rail Contractors' Work and Rail Contractor's Activities and the Design Documentation has been developed in accordance with the interface requirements of the SWTC.
- (f) Macquarie must ensure Design Documentation reflects the requirements agreed at IDCM and obtain signatures signifying the attendees agreement of the requirements.

**Structural electrical and mechanical drawings (SEM)**

- (a) SEM drawings must demonstrate how Macquarie's civil works and the civil works requirements of the Rail Contractors' Work for electrical and mechanical installation are co-ordinated.
- (b) SEM drawings must comprise layout and sectional drawings that use the architectural layouts as a background with the structural framing superimposed to show (at a 1:100 / 1:50 scale) all the required:
  - (i) openings in slabs, sleeves, plinths, reinforced concrete walls, beams and blockwork walls;
  - (ii) openings required for access panels / doors in walls, slabs or beams for the delivery and maintenance of the electrical and mechanical equipment;
  - (iii) cast-in items including pipework, cable sleeves, lifting hooks, brackets, sockets, anchors, lifting beams, floor drains, equipment plinths, and electrical conduits; and
  - (iv) all rebates in concrete surfaces and chases in blockwork that are required for concealed conduits, cables and pipes.
- (c) SEM drawings must include the following installation details for all openings:
  - (i) entity responsible for providing the sleeves or steel enclosure;
  - (ii) entity responsible for sealing the opening within the sleeve; and
  - (iii) Macquarie to seal the remaining opening and outside the sleeve with fire resistant material, compatible with the fire rating of the wall.
- (d) Macquarie must develop initial SEM (**Phase 1 SEM**) that show the preliminary and approximate structural and architectural openings, penetrations, cast in items and builder's works provisions for plant and materials and Rail Contractors' installations. The provisions on the Phase 1 SEM must be based on the intended locations and



arrangements of the major services and the preliminary layout of Rail Contractors' equipment. Macquarie must not rely on the information provided in the provisions and must check all information prior to its use.

- (e) Macquarie must cooperate with the relevant Rail Contractors and the Principal and coordinate the preparation of agreed marked-up Phase 1 SEM to suit the Project Works and the Rail Contractors' Work, which must be included as part of Design Stage 1 documentation.
- (f) Macquarie must develop detailed SEM (**Phase 2 SEM**) as part of Design Stage 2 based on the agreed marked-up Phase 1 SEM.
- (g) Updated SEM documents must be submitted as a part of the Design Stage 3 submissions.

#### **Combined services drawings (CSD)**

- (a) CSD must show (generally at scales of 1:100, 1:50 or 1:25) combined and coordinated arrangements of all the major electrical and mechanical works on architectural layout backgrounds. The services routing and equipment layout must be coordinated with due regard to the design intent, construction sequence, operational safety, maintainability, constructability and aesthetic appearance.
- (b) The CSD must include setting out dimensions and levels of the following items, unless their inclusion will reduce the clarity of the drawings (in which case these must be shown on separate drawings):
  - (i) ductwork routes;
  - (ii) cable trays and trunking routes;
  - (iii) pipework routes and valve locations;
  - (iv) louvres and grille locations;
  - (v) major equipment, including fans, chillers, switchboards, lighting fittings, pumps, air handling units, battery racks, UPS, control panels, compressors and vessels, generators and tanks; and
  - (vi) locations of earthing terminals, emergency push buttons, power isolators and switches, and water and drainage points.
- (h) Macquarie must develop initial CSD (**Phase 1 CSD**) that show the preliminary and approximate spatial arrangements of the building services installations. The arrangements on the Phase 1 CSD may be based on the assumed sizes of the equipment, the intended locations and arrangements of the major services and the preliminary layout of Rail Contractors' Work.
- (i) Macquarie must cooperate with the relevant Rail Contractors and the Principal and coordinate the preparation of agreed marked-up Phase 1 CSD to suit the Project Works and the Rail Contractors' Work, which must be included as part of Design Stage 1 documentation.
- (j) Macquarie must develop detailed CSD (**Phase 2 CSD**) as part of Design Stage 2 based on the agreed marked-up Phase 1 CSD.
- (k) Updated CSD documents must be submitted as a part of the Design Stage 3 submissions.

### **Wall elevation drawings (WEDs)**

- (a) WEDs are required to facilitate the coordination of wall openings, wall mounted equipment, structural reinforcement zones, and lintels, to avoid clashes and ensure constructability.
- (b) The WEDs must show all the openings for electrical, mechanical and systems Works based on the SEM drawings as well as all cast-in items, doors, access panels, blockwork reinforcement zones and the like, to illustrate the coordination arrangement amongst all these items. For any areas with false ceiling, the ceiling line must be shown on the WEDs.
- (c) Macquarie must cooperate with the relevant Rail Contractors and the Principal and coordinate the preparation of agreed marked-up Phase 1 WEDs to suit the Project Works and the Rail Contractors' Work, which must be included as part of Design Stage 1 documentation.
- (d) Macquarie must develop the detailed WEDs ("Phase 2 WEDs") as part of Design Stage 2 based on the agreed marked-up Phase 1 WEDs.
- (e) The Rail Contractors will provide information on any large items which will be fixed to blockwork walls, and the imposed loads on the walls, including of runs of pipes, ducts, cable trays, and dampers. Macquarie must incorporate these details in the Phase 2 WEDs.
- (f) Updated versions of all Documents listed in (a) to (g) above must be submitted as a part of the Design Stage 3 submissions.
- (g) The final WEDs must be used for construction of the civil works.

### **Cable containment drawings**

- (a) The cable containments drawings are layout plans and installation details showing the arrangement of cable containment system with details of sizes, fixings, cables, terminations and hangers.
- (b) In accordance with the requirements of the agreed Phase 2 CSDs, Macquarie must review the cable containment requirements of the Rail Contractors for compatibility with the design of the Project Works and prepare the cable containment drawings.
- (c) Versions of all Documents listed in (a) to (b) above must be submitted as a part of the Design Stage 1, Design Stage 2 and Design Stage 3 submissions.

### **Cast-in conduit drawings**

- (a) The cast-in-conduit drawings are layout plans and installation details, which must show the arrangement of cast in conduit, with conduit sizes and details of cables, loads and terminations (to a minimum of 1:100 scale).
- (b) Rail Contractors will mark the general layout drawings to show the cast in conduit requirements to Macquarie, including mark-up on the general layout drawings.
- (c) Macquarie must review the cast in conduit requirements of Rail Contractors for compatibility with the design of the Project Works and must prepare the cast in conduit drawings.
- (d) Macquarie must arrange a workshop to be attended by the Principal's Representative and all relevant Rail Contractors to review and reach agreement of the cast in conduit drawings.
- (e) Versions of all documents listed in (a) to (d) above must be submitted as a part of the Design Stage 1, Design Stage 2 and Design Stage 3 submissions.

### **Architectural builders works and finishes drawings (ABWF)**

- (a) ABWF drawings must show the various architectural and builder work finishes to be done in the civil structure or partitions and identify interfaces with all electrical and mechanical equipment.
- (b) ABWF drawings must include:
  - (i) reflected ceiling plans, which show the intended layout of ceiling fittings and fixtures with all ceiling or soffit mounted equipment, and where necessary, sectional drawings are produced to identify any visual obstructions;
  - (ii) wall cladding drawings;
  - (iii) floor tiling drawings;
  - (iv) internal glazing drawings;
  - (v) balustrades and gates drawings;
  - (vi) lift shaft and lift machine room drawings;
  - (vii) door schedules;
  - (viii) external work drawings (including louvre, glazed wall, special roof drawings);
  - (ix) roller shutter schedules;
  - (x) raised floor drawings;
  - (xi) toilets, sanitary ware schedule etc.;
  - (xii) signage and advertising panels drawings; and
  - (xiii) head wall units, and tail wall units (for signalling, communications and passenger screen door equipment) and hose reel cabinet drawings.
- (c) At the same time as issuing the Phase 1 CSD and Phase 1 SEM, Macquarie must issue the ABWF drawings to the relevant Rail Contractors. Macquarie must cooperate with the relevant Rail Contractors and the Principal and coordinate the preparation of agreed marked-up ABWF drawings to suit the Project Works and the Rail Contractors' Work.
- (d) Updated versions of all Documents listed in (a) to (c) above must be submitted as a part of the Design Stage 2 and Design Stage 3 submissions.

**Delivery route drawings (DRD)**

- (a) DRD must show the intended routes along which any large or heavy equipment will be transported to their final installation positions and all permanent delivery routes required for future maintenance or equipment replacement, including equipment to be installed by Rail Contractors. The DRD will consist of plans, sections and elevations drawings as necessary.
- (b) DRD must include:
  - (i) temporary delivery routes required during construction;
  - (ii) permanent delivery routes for maintenance or equipment replacement;
  - (iii) dimensions of the largest piece of equipment expected to be delivered along each identified route;
  - (iv) maximum weight of equipment to be delivered along each route;
  - (v) temporary floor and wall openings;

- (vi) sections of walls and plantroom doors that will be temporarily omitted until after equipment delivery;
  - (vii) demountable louvers and wall panels that will be sealed off, but need to remain accessible for maintenance or equipment replacement in the future; and
  - (viii) hoisting provisions and structural beams.
- (c) Macquarie must cooperate with the relevant Rail Contractors and the Principal's Representative and coordinate the preparation of agreed marked-up DRD to suit the Project Works and the Rail Contractors' Work, which must be included as part of Design Stage 1 documentation.
  - (d) Updated DRD must be submitted as a part of the Design Stage 2 and Design Stage 3 submissions.

**Detailed interface specification (DIS)**

- (a) The IRS are minimum requirements and the DIS must be developed from the IRS by Macquarie and the relevant Rail Contractors in accordance with this section 6.4.12.
  - (b) The DIS must be discussed and developed at interface design coordination meetings.
  - (c) Where an IRS or DIS identifies a party as being the "Lead Contractor" that party must:
    - (i) incorporate input from the party/parties identified as "Match Contractor", and must prepare and submit the required interface documentation; and
    - (ii) upon agreement with the Match Contractor/s on the content of a particular interface document, prepare a clean copy for sign-off by both parties.
  - (d) Where an IRS or DIS identifies a party as being the Match Contractor, that party must provide the design input as deemed necessary to the Lead Contractor in accordance with the agreed programme for exchange of information.
  - (e) The interface documentation must be common between the Lead Contractor and the Match Contractor to ensure consistency and compatibility. Failure to gain this will not be a Non-Conformance in Design Stage 2.
  - (f) Where there is no assignment of Lead Contractor or Match Contractor for a particular interface, Macquarie must prepare and submit all required interface documentation.
  - (g) Macquarie must enter the interface requirements into the Principal Representative's requirement management system DOORS® and must continuously update the DOORS® system to reflect the latest version of the DIS as these are developed.
- (a) The DIS must cover all interfaces including functional interfaces, protocol interfaces, software interfaces and design, manufacture and installation interfaces.
  - (b) The DIS must show clearly the demarcation of responsibilities between Macquarie and the Rail Contractors.
  - (c) The DIS must include and cover the following items:

- (i) section 1. purpose;
- (ii) section 2. reference documents;
- (iii) section 3. glossary;
- (iv) section 4. interface specifications;
- (v) section 4.1 interface diagrams;
- (vi) section 4.2 physical interface;
- (vii) section 4.2.1 nature, location and quantity;
- (viii) section 4.2.2 electrical description;
- (ix) section 4.2.3 mechanical description;
- (x) section 4.3 functional interface;
- (xi) section 4.4 protocols;
- (xii) section 4.5 software and data interface;
- (xiii) section 4.6 naming convention;
- (xiv) section 4.7 design constraints;
- (xv) section 4.8 electromagnetic compatibility;
- (xvi) section 5. implementation and installation;
- (xvii) section 6. quality assurance;
- (xviii) section 6.1 interface requirements references;
- (xix) section 6.2 verification and validation;
- (xx) appendices and drawings;
- (xxi) appendix. 1 detailed data interface schedules;
- (xxii) appendix. 2 cables termination schedules / drawings; and
- (xxiii) appendix. 3 system start-up parameters.

#### **Detailed interface test plan (DITP)**

- (a) The DITP must identify the testing activities required to verify that the DIS requirements have been satisfied and must comply with the requirements of Appendix 56.

#### **Interface test specification (ITS)**

- (a) The ITS must cover each of the tests identified in the DITP and must comply with the requirements of Appendix 56.

## **6.5 Construction and manufacture**

### **6.5.1 General**

- (a) Macquarie must provide sufficient design resources during Macquarie's Activities to ensure effective monitoring of Macquarie's Activities including Testing and Commissioning activities, verification and validation of the integration of the design components, clarification of design issues, review of design changes, witnessing of acceptance tests and release of Hold Points.
- (b) Macquarie must provide on the Construction Site from the commencement of construction until the Date of Completion of the last Portion to reach Completion sufficient suitably qualified and experienced mechanical, structural, geotechnical and electrical design representatives.

### **6.5.2 Design changes and non-conformances during construction**

- (a) Macquarie must submit details of all proposed design changes and actions to address construction non-conformances to the Principal's Representative and the Independent Certifier no less than 7 days prior to inclusion within the Project Works.
- (b) Macquarie must not propose any design change or action to address non-conformances that would result in a lower standard or service level in respect of the Sydney Metro City & Southwest or the Martin Place Metro Station.

### **6.5.3 Work methods and training**

- (a) The work methods used by Macquarie in carrying out Macquarie's Activities must result in the use and application of materials and workmanship which, as a minimum, comply with the Principal's General Specifications and with the Codes and Standards.
- (b) Macquarie must provide all personnel involved in Macquarie's Activities with appropriate training in the construction techniques and work methods to be applied during Macquarie's Activities.
- (c) The methods of excavation, working at heights, protection from falling objects and other construction activities must conform to the requirements of relevant Authorities, including WorkCover NSW.

### **6.5.4 Quality of materials and workmanship**

- (a) All workmanship and materials employed by Macquarie in carrying out Macquarie's Activities must comply with the SWTC including:
  - (i) Appendix 12, Appendix 13 and Appendix 14;
  - (ii) Principal's General Specifications; and
  - (iii) Codes and Standards.
- (b) Equipment, pipes and cables must be protected from damage that could be caused by animals or acts of vandalism.
- (c) Assets must be protected from corrosion through design and installation.

- (d) Assets must be fitted in a manner to meet WHS, human factor standards and maintainability requirements.
- (e) For building works, Macquarie must comply with the BCA requirements.
- (f) For electrical installation works, Macquarie must:
  - (i) properly segregate cables;
  - (ii) use appropriate cable trays, conduits, and cable hangers;
  - (iii) provide good protection for wires and cables around corners;
  - (iv) correctly terminate and label all cables and wires; and
  - (v) remove any redundant cables or wires unless they are specifically identified as spares.
- (g) For pipe installations, Macquarie must:
  - (i) use the correct fittings for the intended purpose of the pipe and its installation;
  - (ii) route all pipes neatly and such that they do not affect the safe operation of the Sydney Metro City & Southwest;
  - (iii) apply correct labels and notices; and
  - (iv) have all burrs and swarf removed.
- (h) For mechanical fabrications and installations, Macquarie must:
  - (i) utilise competent fitters and welders appropriate for the application;
  - (ii) dress all welds so they do not affect the outward appearance nor the functionality of the Asset;
  - (iii) remove all rough edges, burrs and sharp corners; and
  - (iv) protect from corrosion.

### **6.5.5 Not used**

### **6.5.6 Demolition**

- (a) Where permanent demolition of infrastructure is required, Macquarie must:
  - (i) undertake the demolition work in accordance with AS2601;
  - (ii) disconnect all Services at the property boundaries in accordance with the requirements of the relevant Service owners and Authorities;
  - (iii) cap all conduits and pipes at the disconnection points to prevent ingress of surface runoff and groundwater;
  - (iv) remove all structures, facilities and debris above ground level;
  - (v) remove all ground slabs, foundations, strip footings, pile caps, tanks and other structures below ground level excluding piles below pile cap level;
  - (vi) remove all demolished materials and debris from the Construction Site;

- (vii) where required, backfill all excavations with fill free of deleterious materials and compact to a density consistent with the surrounding ground;
- (viii) recycle, to the maximum extent possible, all demolished materials to be removed from the Construction Site;
- (ix) comply with all regulations, planning and Authority requirements; and
- (x) develop and implement a demolition method that minimises noise, vibration and air quality impacts.

### **6.5.7 Stockpiling of materials for construction**

- (a) Macquarie must make its own arrangements for temporary or permanent stockpiles of materials arising from Macquarie's Activities.
- (b) Materials which are not suitable for incorporation in the Project Works must be removed from the Construction Site and disposed of at a construction waste recycling facility, or alternatively re-used, to the maximum extent possible.
- (c) Stockpiles located on land outside the Construction Site are subject to the land owner's and occupier's written consent, compliance with the law, consent of relevant Authorities and compliance with the Environmental Documents.
- (d) Stockpiles must not be placed in drainage lines, channels or paths.

### **6.5.8 Explosives and blasting**

- (a) Blasting must comply with Environment Protection Authority (EPA) requirements, the requirements of other relevant Authorities, the requirements of the deed and the requirements in the Environmental Documents.
- (b) Blasting may only be undertaken with the approval of the Principal's Representative.
- (c) Macquarie must provide the Principal's Representative with the following information at least 48 hours in advance of any proposed blasting:
  - (i) the reason why blasting cannot be avoided;
  - (ii) the proposed location and timing of the operation;
  - (iii) the name of the person who will have control of the operation and proof of his/her licence;
  - (iv) documentary evidence that Macquarie has obtained all necessary Approvals from relevant Authorities;
  - (v) precautions proposed to be taken for the protection of the public and property during the operation;
  - (vi) methods of monitoring blast vibration; and
  - (vii) additional information as requested by the Principal's Representative.
- (d) Macquarie must give occupants of the nearby premises, any relevant Authorities and affected Service owners reasonable notice of intended blasting.



### **6.5.9 As-built drawings**

- (a) Macquarie must submit sample as-built drawings for all Assets for review by the Principal's Representative and must obtain the Principal's Representative's acceptance of the sample prior to production of any as-built drawings.
- (b) Macquarie must show on as-built drawings the details of the locations of existing infrastructure within the Construction Site and the location and extent of the Project Works and the Follow-on Works.
- (c) Macquarie must update the approved for construction Design Documentation and any other drawings as necessary to fully describe the Project Works to produce the as-built drawings and submit to the Principal's Representative and the Independent Certifier.
- (d) As-built drawings for any building component of the Project Works must include all drawings produced for the building component, including, but not limited to, design drawings, shop drawings and drawings produced by specialist trades (for example, combined services layouts, structural electrical and mechanical drawings and equipment installation drawings).
- (e) Macquarie must ensure the content, accuracy and level of detail of as-built drawings are equivalent to those in the for construction Design Documentation and are sufficient to describe, enable and facilitate the efficient operation and maintenance of the assets comprising the Project Works.
- (f) Macquarie must include in as-built drawings, the final survey drawings undertaken and signed by a licensed surveyor, in accordance with the Surveying and Spatial Information Regulation 2012 (NSW), certifying the positioning of the Project Works relative to the primary survey grid and the cadastral boundaries and that the Project Works are located within the minimum and maximum clear opening tolerances nominated in this SWTC.
- (g) Macquarie must include in the as-built drawings the locations and extremities of all ground and infrastructure support including rock bolts.
- (h) Macquarie must certify, via a statutory declaration, that each item of the as-built drawings is accurate, complete and correct and that the Project Works as completed are wholly contained within the Project Site.
- (i) Macquarie must ensure the as-built drawings comply with AS1100 and the Sydney Metro CAD/GIS/BIM Manual that is identified in Appendix 57.
- (j) Macquarie must, where necessary to describe the Project Works, or where directed by the Principal's Representative, include digital photographs of specific aspects of the Project Works in as-built drawings.
- (k) Macquarie must identify and cross reference all Assets on as-built drawings with the Asset Management Information, including the Asset Register developed by Macquarie in accordance with section 8A.

### **6.5.10 Building information modelling**

- (a) Macquarie must provide a work-as-executed version of the single fully collaborated, integrated and coordinated electronic 3D model of the Project Works prepared using the BIM software required by section 5.12 of the SWTC.

### 6.5.11 Temporary site facilities

- (a) Site sheds must be as-new and must be maintained in excellent condition.
- (b) Site sheds must be established at locations and positions that minimise the impact on adjoining properties and residents.
- (c) All facilities utilised for the purpose of Macquarie's Activities must be sited, constructed and maintained to meet the requirements of the Principal's Representative and relevant Authorities.
- (d) For the duration of Macquarie's Activities, Macquarie must provide site facilities for use by the Principal's Representative and the Independent Certifier in accordance with Appendix 07.
- (e) Temporary site facilities must satisfy the sustainability requirements of Appendix 50a.
- (f) All temporary site facilities, including site sheds, must be maintained free of graffiti and any advertising material not authorised by the Principal's Representative.
- (g) Macquarie must carry out daily inspections of all temporary site facilities including site sheds.
- (h) For the duration of the Rail Contractors' Activities, Macquarie must provide sufficient and suitable temporary site facilities for use by Rail Contractors' personnel, including site sheds, site offices, lunch rooms, toilets and first aid facilities.
- (i) Macquarie must provide laydown and storage areas, craneage and materials handling, delivery and access/egress routes and sources of temporary power (until HV energisation) that are sufficient and suitable for Rail Contractors to carry out the Rail Contractors' Activities.
- (j) Macquarie must provide access routes for Rail Contractors that are clean, clear and free of dust and water.
- (k) Macquarie must manage dewatering of Area 5 and Area 6 via the use of the Bligh Street Water Treatment Plant through the duration of the Cavern Scope Transfer works. For clarity, Macquarie is not required to manage dewatering from the rail tunnels, nor treatment or discharge of water from the rail tunnels.
- (l) Macquarie must provide flood barriers to prevent water ingress into the caverns from the running tunnels, for the duration of the Cavern Scope Transfer Works.
- (m) Macquarie must maintain the fan at Bligh Street that provides 80m<sup>3</sup>/s top up at the base of the Bligh Street dive, or 40m<sup>3</sup>/s to each cavern. [REDACTED]
- (n) Tunnel ventilation design is by others.
- (o) Cavern ventilation design is by Macquarie.
- (p) Macquarie must allow for 2 brattice relocations to support Rail Contractor tunnel ventilation requirements. At the time Macquarie remove brattices to complete its works, it is the responsibility of the Rail Contractor to ensure adequate tunnel ventilation is maintained.

- (q) [Power costs for Bligh Street Facility includes provision to operate the infrastructure through to \[REDACTED\]](#)
- (r) [REDACTED]
- (s) [Following its engagement with relevant Rail Contractor's in accordance with the Cooperation and Integration Deed, \[REDACTED\]](#)

### 6.5.12 Tunnel and platform hoardings

- (a) Macquarie must provide a hoarding at each of the tunnel portals to separate the running tunnels from the station area.
- (b) The hoarding at each of the tunnel portals must include hinged access doors that allow access for Rail Contractors' plant and equipment.
- (c) All hoardings must be a minimum 2-hour fire rated and must be dust and water proof.
- (d) The hoarding at each of the tunnel portals must be provided from the Site Access Date for the part of the Construction Site containing the tunnel portals and must be removed when a hoarding is provided on the platform coping edges.
- (e) Macquarie must provide hoardings (ATF or similar) on the platform coping edge on each side of Martin Place Metro Station to separate the trackway from the platform.
- (f) The hoardings on the platform coping edges must include access on each platform coping edge that allow access for Rail Contractors' plant and equipment.
- (g) The hoardings on the platform coping edges must be provided prior to the removal of the tunnel portal hoarding and must be removed prior to the Date of Completion of the last Portion to reach Completion.
- (h) All hoardings must include provision for utility services through the hoarding.
- (i) All hoarding must have a structural allowance for the pressure differential associated with the construction ventilation system of the tunnel and trackway and other likely construction loads.
- (j) Macquarie must provide access/egress routes that are sufficient and suitable for Rail Contractors to carry out the Rail Contractors' Activities:
- (i) through the Construction Site; and
  - (ii) along the trackway and to the running tunnels either side of the Construction Site.

### 6.5.13 Hoarding and fence banners and signage

- (a) Macquarie must not place any signage, advertising or branding (other than safety signage or other signage required to comply with Law or signage produced in accordance with designs provided by the Principal's Representative as required by

section 6.5.12(c)) on the external face of any hoarding or fence without the prior written approval of the Principal's Representative.

- (b) Macquarie must prepare and install way finding signage to direct pedestrians, commuters and vehicles around the Construction Site.
- (c) Macquarie must provide, install and maintain hoarding banners for the external faces (visible to the public) of hoardings and fences that are constructed by Macquarie as well as signage that provides the community with details of the Sydney Metro City & Southwest information line and out of hours contact details for Macquarie. The hoarding and fencing banners must be in full colour and produced in accordance with designs provided by the Principal's Representative and to comply with the hoarding requirements of the Sydney Metro City & Southwest Style Guidelines (co-branding).
- (d) Hoarding and fencing banners must be made from vinyl where banners are installed at the locations of future Sydney Metro City & Southwest Stations and made from shade cloth where hoarding and fencing banners are installed at other locations.
- (e) If the hoarding and fencing banners or hoarding and fencing signage are damaged with graffiti, Macquarie must remove the graffiti within two hours of the graffiti being identified.
- (f) If the hoarding and fencing banners or hoarding and fencing signage are irreparably damaged, Macquarie must install replacement fencing banners or fencing signage within 24 hours of this damage occurring.
- (g) Macquarie must, every 12 months, replace the existing hoarding and fencing banners for the external faces of fences and hoardings with new hoarding and fencing banners. the Principal's Representative will provide new artwork every 12 months for the replacement hoarding and fencing banners.
- (h) Where hoarding and fencing banners have been installed on the Construction Site by the Principal or Rail Contractors prior to Macquarie taking possession of areas of the Construction Site, Macquarie must maintain and replace the hoarding and fencing banners in accordance with this section 6.5.12 as if they were installed by Macquarie.

#### **6.5.14 Hoardings, fencing and walls**

- (a) Macquarie must install and maintain temporary hoardings, fencing and walls on and around the Construction Site as necessary to provide safety and security in the performance of Macquarie's Activities. The temporary hoardings, fencing and walls must be erected prior to commencing Macquarie's Activities in the affected areas.
- (b) Hoardings and fencing installed by Macquarie must be made from as-new materials and must at all times be maintained in a neat and tidy condition and be sympathetic with the surroundings.
- (c) Any hoardings, fencing or walls on or around the Construction Site must be maintained free of graffiti and any advertising material not authorised by the Principal's Representative until the Date of Completion of the last Portion to reach Completion.

### **6.5.15 Site restoration**

- (a) Macquarie must comply with the requirements in the Environmental Documents and ensure that significant trees (based on species, age or size) which may be affected by Macquarie's Activities are identified and appropriate protection management measures implemented including fencing and pruning.
- (b) Macquarie must reinstate the Construction Site and complete the architectural and landscaping work forming part of the Project Works progressively as each part of the Project Works is completed.
- (c) All Temporary Areas and other land occupied or used by Macquarie for the purpose of the Project Works, including storage and site facilities, must be reinstated to a condition at least equivalent to that existing prior to the occupation or uses.
- (d) Site reinstatement must be undertaken in accordance with the Environmental Documents.

### **6.5.16 Discharge water quality**

- (a) Without limiting the requirements of the deed, all water including groundwater seepage captured within the Construction Site must be treated and disposed of in accordance with the Environmental Documents and the requirements of relevant Authorities.
- (b) Macquarie must monitor the quality of water discharged from the Construction Site.

### **6.5.17 Maintenance during construction**

- (a) Macquarie must maintain and repair:
  - (i) the Principal Construction Site for the duration of the Construction Licence; and
  - (i1) the Macquarie Construction Site for the duration of Macquarie's Activities; and
  - (ii) the Local Areas from the commencement of any construction activities within each Local Area until the handover of that Local Area to the relevant Authority.
- (b) Macquarie must ensure that all infrastructure, facilities and amenities in the areas being maintained are at all times fit for purpose, clean and tidy, free from graffiti and in a condition which satisfies the requirements of the deed.
- (c) The extended storage of rubbish or loose items on the Construction Site, Local Areas or elsewhere is not permitted.
- (d) Macquarie must monitor and remove graffiti within the following timeframes:
  - (i) offensive graffiti must be removed or covered within 1 hour;
  - (ii) other graffiti on hoarding, fencing banners or fencing signage must be removed or covered within 2 hours; and
  - (iii) all other graffiti must be removed or covered within 24 hours, of Macquarie becoming aware of the graffiti.

### 6.5.18 Road conditions

- (a) Macquarie must ensure that any road, footpath, shared path or cycleway which is open to the public is at all times kept free of mud, dirt, dust, deleterious material, debris, obstructions and trip hazards arising from Macquarie's Activities and in accordance with the Environmental Documents.
- (b) Macquarie must install, maintain and utilise wheel wash facilities where practicable, and cover all construction vehicles to prevent any loss of fuels, lubricants, load or other substances, whether in the form of duct, liquids, solids or otherwise.
- (c) Any spillage or build-up of such material or debris must be cleaned up promptly and any damage caused by such an occurrence must be immediately repaired.
- (d) Macquarie must apply appropriate treatments to roads, footpaths, shared paths or cycleways that protect the roads, footpaths, shared paths or cycleways from damage arising from Macquarie's Activities and allow for repair if damage occurs.
- (e) Macquarie must repair immediately any damage caused by Macquarie's Activities, to any road, footpath, shared path or cycleway which is open to the public, and restore the road, footpath, shared path or cycleway to a condition at least equivalent to the condition it was in immediately prior to the occurrence of the damage.

### 6.5.19 Traffic and transport management

- (a) Traffic and transport management associated with Macquarie's Activities must be planned to avoid delays and detours that will inconvenience the affected public or road users or interfere with traffic during periods of heavy traffic flows.
- (b) Macquarie must obtain approval from the Principal's Representative and relevant Authorities prior to implementing any changes to traffic flow, vehicle, pedestrian, public transport and bicycle movements or adjustments to arrangements for control of traffic on roads, footpaths and shared paths.
- (c) All traffic and transport management associated with Macquarie's Activities must comply with the Environmental Documents and the following:
  - (i) the Principal's General Specification G10 – Traffic and Transport Management;
  - (ii) RTA Traffic Control at Worksites Manual;
  - (iii) AS1742.3 Manual of uniform traffic control devices - Traffic control for works on roads;
  - (iv) relevant Austroads guides;
  - (v) the Construction Traffic Management Framework; and
  - (vi) RMS Supplements to Australian Standards and Austroads.
- (d) Copies of any traffic control plans approved by relevant Authorities that set out specific traffic and transport management arrangements to be implemented at specific locations during the construction of the Project Works and Temporary Works must be issued to the Principal's Representative and the Independent Certifier prior to being implemented.

- (e) Unplanned traffic management activities, including emergency work due to incidents, must be addressed and covered in the Traffic Management Plan, and must be to the satisfaction of relevant Authorities.
- (f) Where traffic control devices include safety barriers, the safety barriers must:
  - (i) comply with the RTA Traffic Control at Work Site Manual; and
  - (ii) be offset from the edge of the nearest adjacent traffic lane in accordance with the requirements of the relevant Authorities and relevant standards.
- (g) Temporary traffic lanes on roads, including minimum lane widths, must comply with the requirements of all relevant Authorities and relevant standards.
- (h) Vehicles involved in Macquarie's Activities must only enter, operate within or exit from a work site in a manner which does not endanger the public and under suitably designed and appropriate traffic control measures.
- (i) Macquarie must provide suitable intersections or points of access for vehicles entering or leaving the Construction Site and at locations where the traffic volumes are increased as a result of Macquarie's Activities. The intersection and access treatments must comply with the requirements of all relevant Authorities.
- (j) Advertising must be undertaken by Macquarie to advise the affected public and road users of the proposed changes to traffic flow, vehicle, pedestrian and bicycle movements and arrangements for control of traffic on roads in accordance with the requirements in Appendix 51.
- (a) Where special events are expected to generate additional vehicle and/or pedestrian traffic in any areas directly or indirectly affected by the Project Works, the Temporary Works or Macquarie's Activities, Macquarie must cooperate with the Principal's Representative and all relevant Authorities and Emergency Services in relation to the planning and preparation for the special event, to facilitate the special event and any associated traffic and pedestrian flows around the Construction Site.
- (b) Macquarie's must modify its Activities to accommodate the requirements of special events and perform Macquarie's Activities so as to minimise any interference with or disruption to any special event or the planning and preparation for any special event.
- (k) Macquarie must consider any additional security requirements during special events.

#### **6.5.20 Road, footpath and shared path occupancies, detours and closures**

- (a) Macquarie must obtain approval from relevant Authorities for all road, footpath and shared path occupancies, detours and closures. Relevant Authorities may elect to prohibit road, footpath and shared path occupancies, detours or closures due to special events or other high traffic demands. An occupancy licence must be obtained from relevant Authorities for all road, footpath and shared path occupancies, detours and closures.
- (b) When any unplanned closure of a lane, shoulder, footpath or shared path or a restriction in the flow of pedestrians, cyclists, public transport services or traffic

occurs, Macquarie must immediately advise the Principal's Representative and the relevant Authorities of the nature of the closure or restriction and of the schedule for reopening of the lanes, shoulders, footpaths or shared paths. Macquarie must take all required measures to open the lanes, shoulders, footpaths or shared paths as quickly as possible.

#### **Compliance with traffic instructions during construction**

- (c) Macquarie must comply with any traffic direction or instruction given by the NSW Police Service, a relevant Authority or the Principal's Representative in respect of traffic and transport management.
- (d) The NSW Police Service, a relevant Authority or the Principal's Representative may, at any time, instruct Macquarie to re-open a lane, shoulder, footpath or shared path without delay, whether or not that lane, shoulder, footpath or shared path was closed by prior agreement. Macquarie must immediately comply with such instructions.

#### **Bicycle provisions**

- (e) Macquarie must plan and execute Macquarie's Activities to ensure safe cycling conditions are maintained at all times during Macquarie's Activities.
- (f) Macquarie must comply with "Austroads Guide to Traffic Engineering Practice - Part 14 - Bicycles" in relation to the measures to be taken to ensure safe cycling conditions.
- (g) Temporary or modified provisions for bicycles must comply with the requirements of relevant Authorities.

#### **Pedestrian provisions**

- (h) Macquarie must plan and execute Macquarie's Activities to ensure safe pedestrian conditions are maintained at all times during Macquarie's Activities.
- (i) Macquarie must comply with "AustRoads Guide to Traffic Engineering Practice - Part 15 – Pedestrians" in relation to the measures to be taken to ensure safe pedestrian conditions.
- (j) Temporary or modified provisions for pedestrians must comply with the requirements of relevant Authorities.

#### **Traffic controllers**

- (k) Macquarie must ensure that all persons who are required to perform the duties of a traffic controller undertake the relevant training package(s) with a licensed training provider and are examined and certified as competent to perform their respective traffic controller duties.

### **6.5.21 Incidents**

- (a) Without limiting any other requirements of the deed, including clause 9.4 of the deed, in the event of an Incident occurring at the Construction Site or any other location affected by Macquarie's Activities, Macquarie must:
  - (i) gather all relevant information about the Incident, including but not limited to witness statements and details, photographs, and locations of all safety devices, people, vehicles and equipment and anything else whose location may have a bearing on the event;



- (ii) record all information gathered and its knowledge of the facts as soon as practicable and possible after the accident or incident;
- (iii) provide notification to the Principal's Representative and all relevant Authorities of the Incident as soon as possible but not later than 2 hours after the event; and
- (iv) provide a detailed report with all available information to the Principal's Representative within 2 days of the Incident.

#### **6.5.22 Fire precautions**

- (a) Macquarie must, during the construction of the Project Works and Temporary Works, do all things necessary to minimise the risk of fire within the Construction Site and minimise the risk of fire adjacent to the Construction Site due to the performance of Macquarie's Activities.

#### **6.5.23 Construction noise and vibration**

- (a) Macquarie must, during the performance of Macquarie's Activities, comply with the noise and vibration requirements in the Environmental Documents and the Principal's Sydney Metro City & Southwest Construction Noise and Vibration Strategy.
- (b) Macquarie must install and maintain acoustic walls and other noise attenuation devices in accordance with the requirements of the Environmental Documents to provide noise mitigation during the performance of Macquarie's Activities.
- (c) Macquarie's Activities that require the installation of acoustic walls or other noise attenuation devices must not commence until the acoustic walls or other noise attenuation devices are erected.
- (d) Acoustic walls and other noise attenuation devices installed by Macquarie must be made from as-new materials and must at all times be maintained in a neat and tidy condition and be sympathetic with the surroundings.

#### **6.5.24 System Verification Reviews**

- (a) Macquarie must complete System Verification Reviews (**SVR**) progressively.
- (b) Macquarie's SVRs must be carried out on each system in the Works as well as any interfaces with other systems and the Rail Contractors' Work.
- (c) Macquarie must ensure that the documents for each SVR are of a consistent format and are progressively submitted to the Principal's Representative for review in accordance with the deed as work proceeds.
- (d) Prior to the commencement of integration testing, Macquarie must demonstrate that all SVR actions are complete and that the system is ready for integration testing with the existing network, prior to final acceptance testing and Asset Handover.
- (e) Macquarie must ensure that final SVR documentation is submitted to the Principal's Representative for review in accordance with the deed following system integration of the relevant system or subsystem and prior to Completion of each Portion.

### **6.5.25 Construction Compliance with Design**

- (a) The inspection and testing performed by Macquarie must include certification that the construction of the Works is compliant with the Design Documentation that Macquarie is entitled to use for construction in accordance with clause 20.11 of the deed.
- (b) Such certification must be provided by Macquarie and must include certification from Subcontractors who developed or assisted in the development of that Design Documentation.
- (c) Certification documentation must be submitted to the Principal's Representative prior to obtaining Completion for each Portion.
- (d) Certification must be provided for the following design elements:
  - (i) all structural works, including foundations, superstructure, retaining walls, noise walls and the like;
  - (ii) all mechanical ventilation and air conditioning services;
  - (iii) all electrical services including lighting;
  - (iv) all communications services, including cabling;
  - (v) mechanical transportation systems, including lifts and escalators;
  - (vi) all Fire and Life Safety services;
  - (vii) all glazing, including glazing support structures;
  - (viii) all transport network infrastructure works, including train rails, traction power works, earthing and bonding, high voltage electrical works, transformers, cabling and signalling works; and
  - (ix) any other component of the Works that the Principal's Representative requests.

## **6.6 Testing and Commissioning**

Macquarie must complete all Testing and Commissioning in accordance with the requirements of Appendix 56 and the Commissioning and Operational Readiness Plan.

## **6.7 Property access and Services**

- (a) Macquarie must carry out the Property Works and do all things necessary to satisfy the reasonable requirements of individual owners, occupiers of and visitors to properties, businesses and community facilities affected by Macquarie's Activities in respect of timing, duration and the carrying out of the relevant Macquarie's Activities.
- (b) Macquarie must ensure that suitable access is maintained at all times to all properties and between severed portions of properties. Appropriate detours must be arranged and provided.

- (c) No reduction to the level of access (vehicle, cyclist or pedestrian) to any commercial property during its relevant trading hours is permitted without the written agreement of the owner and occupier.
- (d) Macquarie must make all arrangements with all affected persons in relation to the impacts and consequences of the interruption of any Services.

## **6.8 Construction Completion and Completion requirements**

- (a) Without limiting any other requirements of the deed, it is a condition precedent to Construction Completion of Portion 1 and Completion of each Portion other than Portion 1 that Macquarie:
  - (i) has fulfilled its obligations under section 3.16 of the SWTC in respect of pre-construction and post-construction survey reports for that Portion;
  - (ii) has provided the Principal's Representative with the fire engineering certification required by section 2.2(c)(iv) of Appendix 43 for that Portion;
  - (iii) has provided the Asset Management Information for all Assets in that Portion in accordance with section 8A; and
  - (iv) has provided reports for that Portion in accordance with the requirements of Appendix 53a.

**7 Not used**

**8 Not used**

## 8A Asset Management Information

### 8A.1 General

- (a) Without limiting its other obligations to provide Asset Management Information, Macquarie must provide, as Design Documentation, all Asset Management Information required to support applications by the Principal to the Sydney Metro Sub-Configuration Control Board and Configuration Management and Asset Assurance Committee and to support configuration change requests.
- (b) Asset Management Information must be prepared for the Project Works in accordance with the requirements of:
  - (i) clause 21.10 of the deed;
  - (ii) this section 8A;
  - (iii) Sydney Metro Employers Information Requirements SM EM-ST-203; and
  - (iv) Sydney Metro CAD/GIS/BIM Manual SM EM-PW-304.
- (c) Macquarie must progressively prepare and submit in accordance with the timing requirements of clause 21.10 of the deed all Asset Management Information to the Principal's Representative and the Independent Certifier in three stages:
  - (i) an initial draft version;
  - (ii) a final draft version; and
  - (iii) a final version.
- (d) Each submission of the Asset Management Information must be validated and verified in terms of accuracy and compliance with the requirements of the deed by Macquarie prior to submission to the Principal's Representative and the Independent Certifier.

### 8A.2 Document Identification

- (a) Macquarie must use the numbering system generated by the PDCS for all Asset Management Information.
- (b) the Principal's project descriptors and drawing band numbers will be provided by the Principal's Representative upon request by Macquarie.
- (c) Revision numbers for the initial draft versions of the Asset Management Information must be in an alphabetic format (e.g. "A", "B", "C").
- (d) Revision numbers for the final draft version and final version of the Asset Management Information must be in a numeric format (e.g. "1", "2", "3") with no decimal places.
- (e) Asset Management Information must, as a minimum, be identified in the following ways:

- (i) by the document number and revision number in the electronic file name, separated by a unique divider (e.g. "-" or "." ) that is not used elsewhere in the file name;
- (ii) by the document number and a fully descriptive title on the front page of the document; and
- (iii) by the above document number and revision number on all pages of the document.

### **8A.3 Document file types**

Macquarie must:

- (a) submit each Asset Management Information document in its own file. Multiple Asset Management Information documents must not be contained in a compressed (zipped) file;
- (b) submit the Asset Management Information documents in an acceptable format for the document type. Acceptable electronic formats are Microstation CAD files, TIF format image files, JPG format photographs, Microsoft Excel spreadsheets, Microsoft Word, word-processing files, Microsoft PowerPoint presentation files, Microsoft Access relational data base files and Adobe Acrobat portable document format (PDF);
- (c) submit drawings in the format required by the Principal's Representative;
- (d) submit native 'updateable' files for the final draft versions of the Asset Management Information, including:
  - (i) drawings, 3D drawings, or other modelled data;
  - (ii) as-built drawings;
  - (iii) asset registers;
  - (iv) operation and maintenance manuals;
  - (v) schedules of finishes;
  - (vi) technical maintenance plans;
  - (vii) technical descriptions and operating guides;
  - (viii) service schedules;
  - (ix) failure modes, effects, and criticality analysis (FMECA) and/or reliability availability maintainability and safety (RAMS) calculations;
  - (x) equipment software and configuration files (including software programs necessary to access such files);
  - (xi) training programs; and
  - (xii) forms required for maintenance activities;
- (e) include all required data within the designated file (whether view file or native file) without links between files;

- (f) submit all Asset Management Information in digital form as individual computer files via the PDCS; and
- (g) submit a separate PDCS document transmittal that includes an index to these documents where large numbers of documents (more than 100) are submitted on one subject (e.g. certificates and concrete records).

#### **8A.4 Document transmittals**

- (a) Macquarie must adhere to the standard transmittal format generated by the PDCS.
- (b) The PDCS document transmittals must, as a minimum, include the following metadata for each document:
  - (i) document number;
  - (ii) revision number;
  - (iii) full document title / description matching that written in the document front page;
  - (iv) the discipline responsible for the preparation of the document;
  - (v) document type (e.g. “manual”, “drawing”, “certificate”);
  - (vi) the location of the Asset to which the document relates; and
  - (vii) other relevant metadata as requested by the Principal's Representative.

#### **8A.5 Project description**

Macquarie must provide with each submission of Asset Management Information a report titled 'Project Description' detailing the following:

- (a) the scope of the Project Works;
- (b) the major stakeholders;
- (c) interfaces with adjoining existing assets, including identification of those assets not forming part of the Project Works;
- (d) any new or altered services or systems;
- (e) datelines i.e. completion and Commissioning dates for elements of the Project Works; and
- (f) any other relevant information.

#### **8A.6 Schedule of contact details**

Macquarie must provide with each submission of Asset Management Information a 'Schedule of Contact Details', including:

- (a) the names of Macquarie's key personnel and the Subcontractors' key personnel involved in the design, construction, Commissioning and certification of the Project Works and the corresponding initials utilised on drawings and documentation;
- (b) details of all Subcontractors, including Subcontractor's role, name, ABN number, address, telephone number, fax numbers and website; and

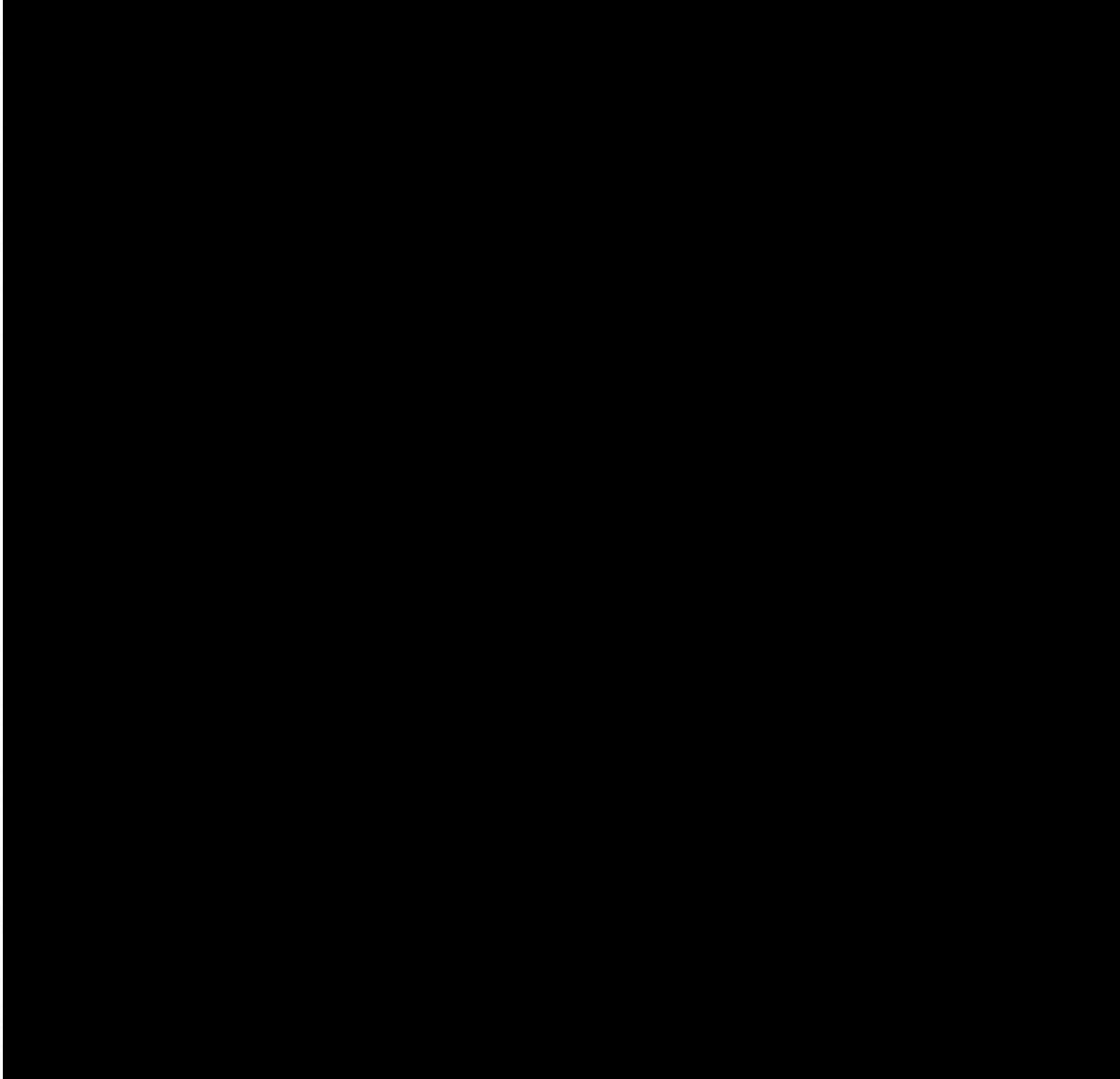
- (c) primary contact names within Macquarie's and Subcontractors' organisations for enquiries relating to the Project Works.

### **8A.7 Asset register**

Macquarie must provide with each submission of Asset Management Information an Asset register that:

- (a) is a comprehensive data collection system for all assets forming the Project Works which includes a digital version of the register of Assets in a single relational database, with defined asset naming, classification and location systems. Macquarie must obtain the Principal's Representative's approval of the naming, classification and location conventions and protocols;
- (b) provides details of all assets forming the Project Works other than architectural floor, wall and ceiling finishes which must be included in the schedule of finishes in the manuals identified in Appendix 48;
- (c) is divided into sub-asset groups containing items that are commonly grouped together (e.g. systems) and provides an index to the groups in the front of the Asset register; and
- (d) can be uploaded to the operator's asset management system without further manipulation by reflecting the operator's required asset breakdown structure of sub assets, systems and nomenclature.

## 9 Cavern Scope Transfer – LWW CICG Minutes





Document comparison by Workshare 10.0 on Wednesday, 9 December 2020  
9:35:49 PM

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Document 2 ID	iManage://aus-cloud-ashurst.imanagework-au.com/AUS/665094785/1
Description	#665094785v1<aus-cloud-ashurst.imanagework-au.com> - SDD - Schedule 4 - Amendments to Schedule C01 of the Base SDD (Received from Sydney Metro on 9 December)
Rendering set	Ashurst

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Style change	0
Format changed	0
Total changes	74



# Sydney Metro City & Southwest

## Station Delivery Deed

### Martin Place Metro Station Project

#### Schedule C1

#### Scope of Works and Technical Criteria

#### Appendix 67 – Cavern Scope Transfer

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<b>PROJECT</b>	Martin Place Metro Station	<b>DATE</b>	9 December 2020
<b>GROUP</b>	Sydney Metro City & Southwest	<b>STATUS</b>	FINAL
<b>AUTHOR</b>	Sydney Metro	<b>REVISION</b>	2.0
<b>COMPANY</b>	Sydney Metro	<b>FILE NUMBER</b>	XX
<b>FILE NAME</b>	MPSD Schedule C1 SWTC Appendix 67 –Cavern Scope Transfer		

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# 1 Overview and Scope

## 1.1 General

- (a) This Appendix 67 describes the scope and technical requirements for the tunnel ventilation system (TVS) slab, adit lining and trackform base slab at the Martin Place Metro Station.
- (b) This Appendix must be read in conjunction with the Interface Requirement Specifications (IRS) as updated in accordance with section 5.19 of the SWTC.

## 1.2 Scope

- (a) The scope of the TVS slab is to provide a concrete slab within the platform cavern to create a plenum for the TVS system and to enable the OTE, OHW and PSD to be fixed from it.
- (b) The scope of the adit lining scope is to provide a waterproof adit lining between the platform cavern and station.
- (c) The scope of the track base slab is to provide the support infrastructure for the trackwork installed by Rail Contractors and includes;
  - (i) concrete invert between the minimum clear opening and Interface Contractors non-ballasted trackform (floating and transitional slab track);
  - (ii) lateral restraint system to support the Interface Contractors non-ballasted trackform (floating and transitional slab track); track drainage system; and
  - (iii) under line crossings (also known as cross track ducts).

## 2 Performance and technical requirements - TVS

### 2.1 Design Loadings

- (a) The Project Works must be designed and constructed to accommodate the following loadings: "
- (i) superimposed surface loadings including traffic loading and effects;
  - (ii) ground and hydrostatic loading including loadings due to leaking or failed Utility Services and surface;
  - (iii) flooding;
  - (iv) loadings due to stresses locked into the rock mass, due to geomorphic processes or structural features in;
    - A. the rock mass;
    - B. seismic effects;
    - C. loadings from adjacent infrastructure;
    - D. buckling resistance loads;
    - E. long and short term yield or squeeze;
    - F. unequal grouting pressure;
    - G. temperature, creep and shrinkage; and
    - H. long term variations in groundwater levels;
  - (v) AS 5100 Set Bridge Design Set for dead loads and superimposed dead loads;
  - (vi) AS 5100 Set Bridge Design Set for live loads;
  - (vii) AS 5100 Set Bridge Design Set for rail loads;
  - (viii) AS/NZS 1170 Set Structural design actions Set for live loads that are not specified in AS 5100 Set Bridge Design Set;
- (b) Convergence will be no greater than as per the Metron design as included in Appendix 1.
- (c) There is no requirement for scabbling or dowelling of the secondary liner into the existing permanent liner.

### 2.2 Earthing and Bonding

- (a) Earthing and bonding must be in accordance with the Metron Earthing, Bonding and Electrolysis Strategy Rev P04.2 (dated 29/01/2020) and comments as provided by Lendlease dated 24/4/20.

## 2.3 Design Life

(a) Assets must have the following minimum Design Life (subject to Maintenance):

Table 1 – Design Life

	Element	Design Life
<b>General</b>		
1	Station adits	100 years
2	other structural elements, excluding structural elements associated with flood protection	100 years
3	earthing and electrolysis protection	100 years

## 3 Performance and Technical Requirements - Station Adit

### 3.1 General

- (a) All concrete linings must have a minimum compressive strength of 40MPa.
- (b) The design of concrete linings must be in accordance with AS 5100 Set: Bridge Design Set, unless specified otherwise in this SWTC.
- (c) Station adits must have durable concrete linings that:
  - (i) are constructed using unreinforced concrete or reinforced concrete using only steel fibre, mesh and/or bar;
  - (ii) have a minimum thickness of 300 mm; and
  - (iii) Max. embedded anchor depth is allowed to within 150mm of the extrados of the permanent lining, with the following provisions;
    - A. drill hole size is less than 50mm in diameter;
    - B. the minimum spacing between drill hole annuli is to be at least twice the diameter of the larger hole;
    - C. no more than ten drill holes are to be formed per square meter of the lining; and
    - D. drill holes are to be located to avoid lining reinforcement.

### 3.2 Reinforced Concrete Linings

- (a) The crack width of reinforced concrete linings at serviceability limit state must be calculated in accordance with BS EN 1992 Eurocode 2: Design of concrete structures and must not exceed the crack width limits of 0.3 mm for station caverns and station adits.

### 3.3 Concrete Finishes

- (a) Concrete finishes for formed surfaces must be in accordance with AS 3610 Formwork and Concrete, and as follows
  - (i) Class 3 for TVS trackside walls
  - (ii) Class 5 where concrete finish is off form and not visible
  - (iii) Gun finish to adit lining; and
  - (iv) Trowel finish to plenum slab



### **3.4 Sprayed Concrete Facings**

- (a) All sprayed concrete facings on retaining structures must be durable concrete that is reinforced using steel fibre, mesh and/or bar. Sprayed concrete facings must comply with the requirements of Roads & Maritime Services Specification D&C B82 Shotcrete Work, except where amended by Station Concrete Supply and Testing Specification Rev 02 and Pedestrian Tunnel Shotcrete Specification Revision C.

### **3.5 Waterproofing**

#### **3.5.1 General Requirements**

- (a) Any sheet waterproof membrane systems used by Macquarie must comply with the requirements in section 3.5.2.

#### **3.5.2 Sheet Waterproof Membrane Systems**

The design, field trials and installation of any sheet waterproof membrane systems must, as a minimum comply with the following requirements:

- (a) sheet waterproofing membrane systems must include a geotextile fleece fixed to the lining substrate and a sheet waterproofing membrane fastened to the geotextile fleece;
- (b) the geotextile fleece must be fixed onto the lining substrate with non-projecting disks. The disks must be secured through the geotextile fleece and into the lining substrate. The disks must be made of a compound that allows the sheet waterproofing membrane to be fully welded to the surface of the disk;
- (c) the sheet waterproof membrane must consist of a continuous impermeable heat-welded sheet formed from one of the following materials: "
  - (i) soft polyvinyl chloride (PVC) unreinforced; or
  - (ii) flexible polyolefin (FPO/TPO) unreinforced; or
  - (iii) high-density polyethylene (HDPE); or
  - (iv) ethylene copolymerical bitumen (ECB); or
  - (v) very low density polyethylene (VLDPE).
- (d) the sheet waterproof membrane as supplied must be of such dimensions and shape that will result in a minimum of on-site seam welds; "
- (e) the lining substrate surface must be prepared for fixing of the geotextile fleece in accordance with geotextile fleece manufacturer's instructions. All fixtures must be removed from the lining substrate prior to application of the geotextile fleece. Any core holes must be backfilled with mortar to be flush with the surface of the lining substrate;
- (f) all sheet waterproof membrane overlaps must be welded in accordance with the sheet waterproof membrane manufacturer's instructions. Two lines of weld must be used on each joint forming a double seam. The Contractor may nominate exceptions to this requirement for approval where the formation of a double seam may not be possible to construct.

- (g) where protrusions through the sheet waterproof membrane are required, they must be fitted with collars to maintain the watertightness of the sheet waterproof membrane systems;
- (h) field trials must be undertaken to demonstrate the capability of the equipment, workmanship, materials and application methods of the sheet waterproof membrane systems under field conditions; and
- (i) project specific quality control and assurance procedures must be established to ensure the integrity, durability and capacity of the sheet waterproofing membrane systems. Any sheet waterproof membrane not meeting specified requirements must be removed, including any associated water management measures or smoothing layer, and replaced. The cause of the non-conformance must be rectified before placing any further sheet waterproof membranes.

### 3.5.3 Watertightness

- (a) The Project Works must achieve the watertightness grades specified below;

**Table 2:** Watertightness

	Element	Watertightness Grade
1	Station adits	Grade A

- (b) Grade A watertightness grade is defined as: watertight with the complete absence of any leakage, seepage and damp patches;

### 3.5.4 Groundwater Seepage

- (a) Groundwater seepage through the Station adits concrete linings is not permitted.

### 3.5.5 Groundwater Control

- (a) The Project Works be designed as undrained.

### 3.5.6 Durability

- (a) The exposure classification used for the durability design must be C3 Environment.

## 3.6 Operational Loads

### 3.6.1 General

- (a) Where superimposed dead loads are specified, load factors must be taken from Table 6.3 (b) Special Cases in AS 5100.2-2017 Bridge design - Design loads, and the type of load shall be "Removable".
- (b) Unless otherwise nominated in this Appendix 67, uniformly distributed loads are to be applied over the full extent of loading zones as identified on drawing NWRLSRT-PBA-SHC-TU-DWG-930200 to NWRLSRT-PBA-SHC-TU-DWG-930209. "
- (c) Unless otherwise nominated in this Appendix 67, Macquarie must adopt a minimum self weight of concrete of 24 kN/m3. "
- (d) "live load" must be read as "imposed action";
- (e) "dead load" must be read as "permanent action";

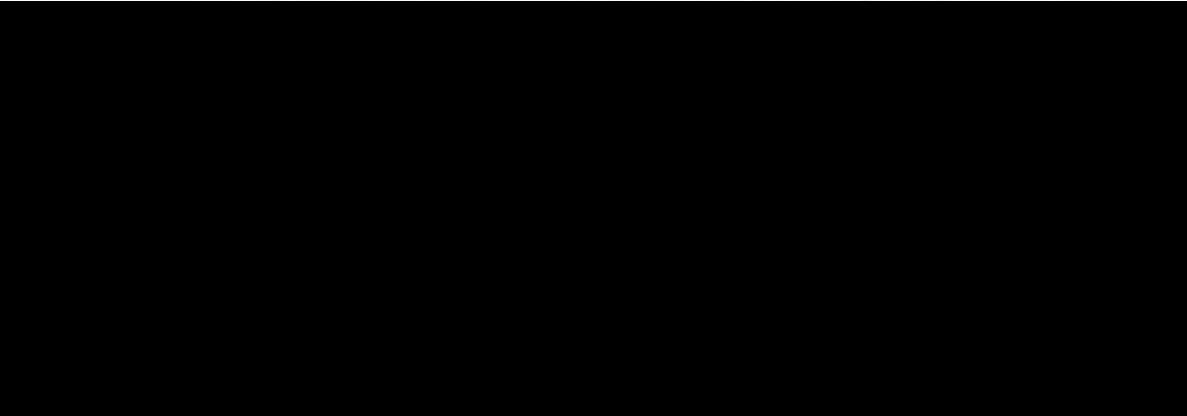
- (f) “uniformly distributed load” must be read as “distributed action”; and
- (g) “point load” must be read as “concentrated action”.

### 3.6.2 Running Tunnels

- (a) Load Case L1:
  - (i) cables and other services: 1.5 kPa uniformly distributed superimposed dead load acting vertically downwards;
  - (ii) overhead conductor rail: 1.0 kN downwards superimposed dead point load applied at a coincident location that induces the most severe effect; and
  - (iii) train induced air-pressure: 1.5 kPa uniformly distributed live load acting perpendicular against or away from (suction) the Running Tunnel lining to induce the most severe effect.
- (b) Load Case L2:
  - (i) track slab: dead load due to the self-weight of concrete from tunnel lining invert to 2.14 m below the running tunnel axis;
  - (ii) train induced air pressure: 1.5 kPa uniformly distributed live load acting perpendicular against or away from (suction) the Running Tunnel lining to induce the most severe effect; and train loading: 40 kPa uniformly distributed live load acting vertically downwards.
- (c) Load Case L3:
  - (i) cables and other services: 1.5 kPa uniformly distributed superimposed dead load acting vertically downwards;
- (d) Load Case L3:
  - (i) cables and other services: 1.5 kPa uniformly distributed superimposed dead load acting vertically downwards;
  - (ii) "train induced air pressure: 1.5 kPa uniformly distributed live load acting perpendicular against or away from (suction) the Running Tunnel lining to induce the most severe effect. "
- (e) The design of these elements must consider fatigue effects due to load cycles from trains / fan operations.
- (f) TVS System ultimate limit state air pressure including equipment must be designed to be mitigated by dampers failing to an open position (i.e. not a build-up of pressure), pressure sensors, alarm and interlock are in place to prevent exceedance of air pressure as determined by Rail Contractors.
- (g) Operational/Fatigue:  $\pm 1.0$  kPa
- (h) SLS:  $\pm 3.0$  kPa
- (i) ULS:  $\pm 5.0$  kPa
- (j) The plant maintenance loads and plant installation loads are limited to +3kPa

### 3.6.3 Surface Loadings

- (a) Macquarie must adopt a minimum live load of 20 kPa applied at the ground surface level above the Running Tunnels within the Construction Site applied to the adits.



### 3.8 Impact

- (a) Macquarie must design Station Caverns to accommodate impacts from train collision loads and train derailment loads in accordance with AS 5100 Bridge Design Set for underground railway, air space developments and similar situations.
- (b) Train Collision Loads (CT) - 500kN load in any direction except downwards, applied over an area of one square metres (AS5100.2 Cl 11.4.3).

### 3.9 Fire

The Station Caverns must be designed to meet the following design fire resistance requirements;

Table 3 – RABT-ZTV (railway) Fire Characteristics

Time	Air/Air Temperature (oC)
0	15
5	1200
60	15
170	15
240	15

- (a) Performance - the concrete must be designed and constructed to ensure that the function and structural integrity of the concrete in the event of fire is maintained.
- (b) Methodology and Demonstrating Compliance - the Macquarie must demonstrate and provide evidence of how the fire resistance requirements will be achieved which at a minimum must include the following:
- (i) the design of concrete exposed to fire must follow the methodologies described in EN 1992-1-2 Eurocode 2 “Design of concrete structures - Part 1-2: General rules - Structural fire design”;

- (c) it must be demonstrated through analysis that when exposed to the time-temperature curve defined in Table 3, that the concrete is able to maintain structural stability at the resultant temperatures experienced during and after the fire event;
- (d) There is no requirement for fire detection within the TVS Plenum.

### **3.10 Electrolysis**

- (a) Any steel reinforcement (mesh and/or bar) in Station Caverns and Station Adits must be;
  - (i) made electrically continuous over the entire length of the Station Caverns and Station Adits.
  - (ii) Steel reinforcement elements (mesh and/or bar) must be welded to at least two other steel reinforcement elements (mesh and/or bar). Fillet welds must be used and must be carried out by a qualified welder.
  - (iii) "Electrolysis monitoring points must be provided at each end of any electrically continuous steel reinforcement (mesh and/or bar) using ERICO FDB-16 earthing bonds or equivalent. The electrolysis monitoring points must be welded to the reinforcement by a qualified welder using fillet welds with a minimum depth of 30 mm. The threaded hole in the electrolysis monitoring point plate must be protected by a removable barrier. "

## 4 Performance and Technical Requirements – Track Base Slab

### 4.1 General

- (a) The track base slab must be designed on the following basis: "
- (i) geometry as defined by the applicable Interface Contractor(s);
  - (ii) support design loads as defined by the applicable Interface Contractor(s);
  - (iii) support non-ballasted trackform; and
  - (iv) concrete invert to be of varying thickness not exceeding 700mm and interface with the trackform which has the following depth requirements:
    - A. Type 3a trackform: 770mm depth (from top of rail) +20mm/-0mm; and
    - B. Type 3b trackform (10m length transition at each end): 770mm depth (from top of rail) +20mm/-0mm. "
- (b) Macquarie must ensure the track base slab does not have any detrimental effect to the trackform which it supports during its Design Life.
- (c) Macquarie must ensure that the track base slab design allows for the track alignment design to provide adequate clearance within the Station and is consistent with the kinematic envelope (KE) of Sydney Metro Northwest. "
- (d) The track base slab must:
- (i) be designed to not prohibit a compliant trackform by the Rail Contractor;
  - (ii) support all static and dynamic loads for the operation of the trains, both
  - (iii) empty and fully loaded with passengers; and "
  - (iv) be compatible with the available maintenance operation.
- (e) The track base slab drainage system at the station must:
- (i) consist of:
    - A. channels;
    - B. drains;
    - C. pipes; and
    - D. connections to the tunnel groundwater system.;
  - (ii) provide sufficient capacity to accommodate annual track wash down of 2000l/hr;
- (f) Macquarie must supply and install the following under line crossings for each track at the station:

- (i) 70 no. 100mm ducts; and
  - (ii) 55 no. 150mm ducts.
- (g) All under line crossings must be located within the concrete invert.
- (h) All under line crossings in Back of House areas must extend at least 100mm above platform level on the platform side and 100mm above rail level on the trackside. "
- (i) All under line crossings must contain:
- (i) draw wires;
  - (ii) temporary caps to avoid blockages; and
  - (iii) be secured to allow track base slab construction.
- (j) Macquarie must assume that lateral restraint for the track base slab is provided by the platform wall, and TVS lining. No shear will be taken into the track base slab through starter bars / dowels along extent of platform. Lateral restrain shear keys required at Back of House positions.
- (k) Scabbling or Doweling of the track base slab into the existing permanent linings is not required.

## 4.2 Installation Requirements

- (a) Macquarie must install the track base slab to the tolerances as per section 4.1 a) iv) of this SWTC Appendix.
- (b) 60mm cover must be provided between the ULX and the drainage channel. A reduced cover will only be accepted where it can be demonstrated that the required cover cannot be provided.





## SCHEDULE 5

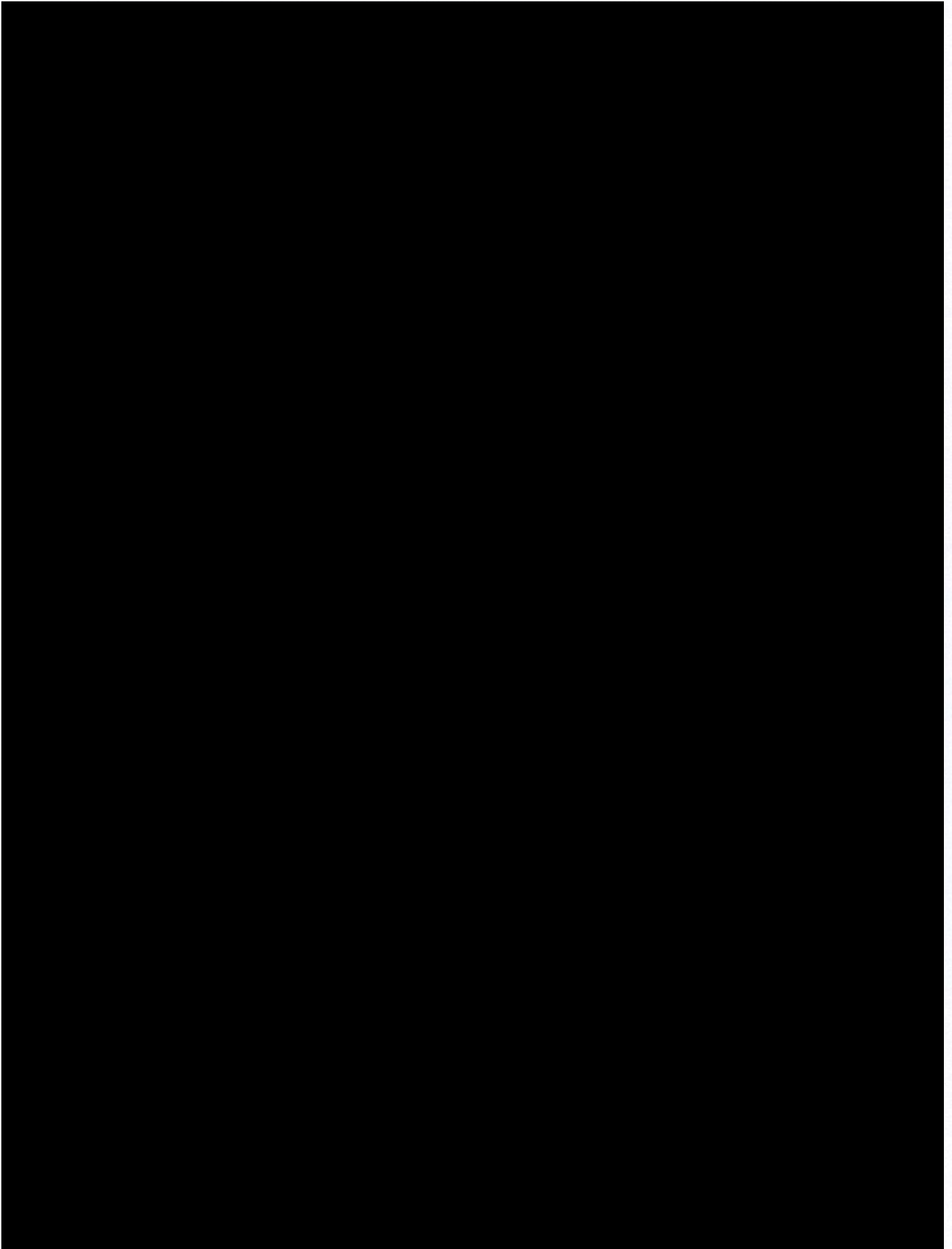
### Amendments to Schedule E1 of the Base SDD

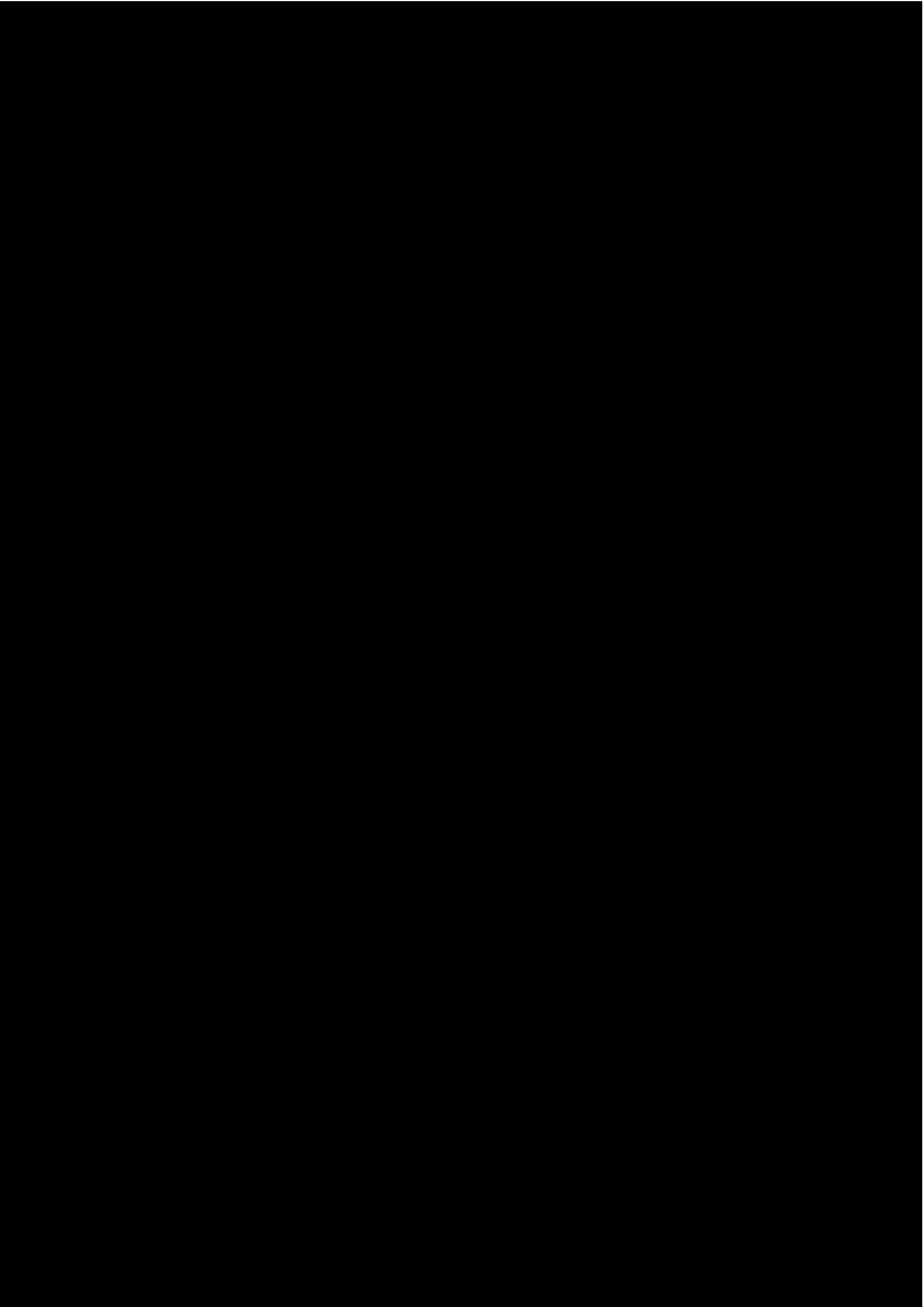
With effect from the Effective Date, Schedule E1 of the Base SDD is deleted and replaced with the version **included** in this Schedule 5, with the amendments to the version included in the Base SDD shown in mark-up.



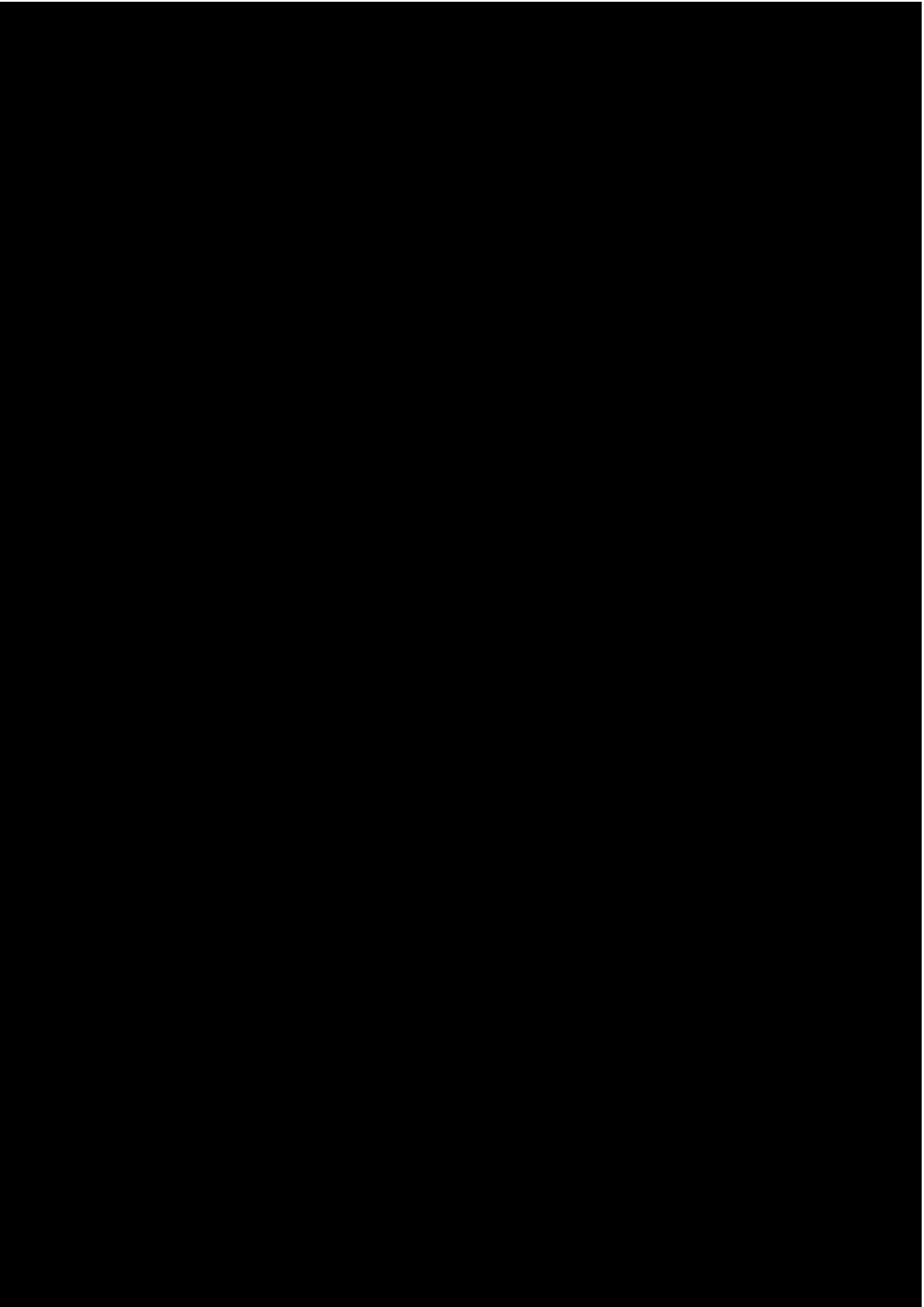
*Proposed base for CST DeV* Schedule 5 – Amendments to Schedule E1 of the Base SDD

**SCHEDULE E1**  
**Payment Schedule**













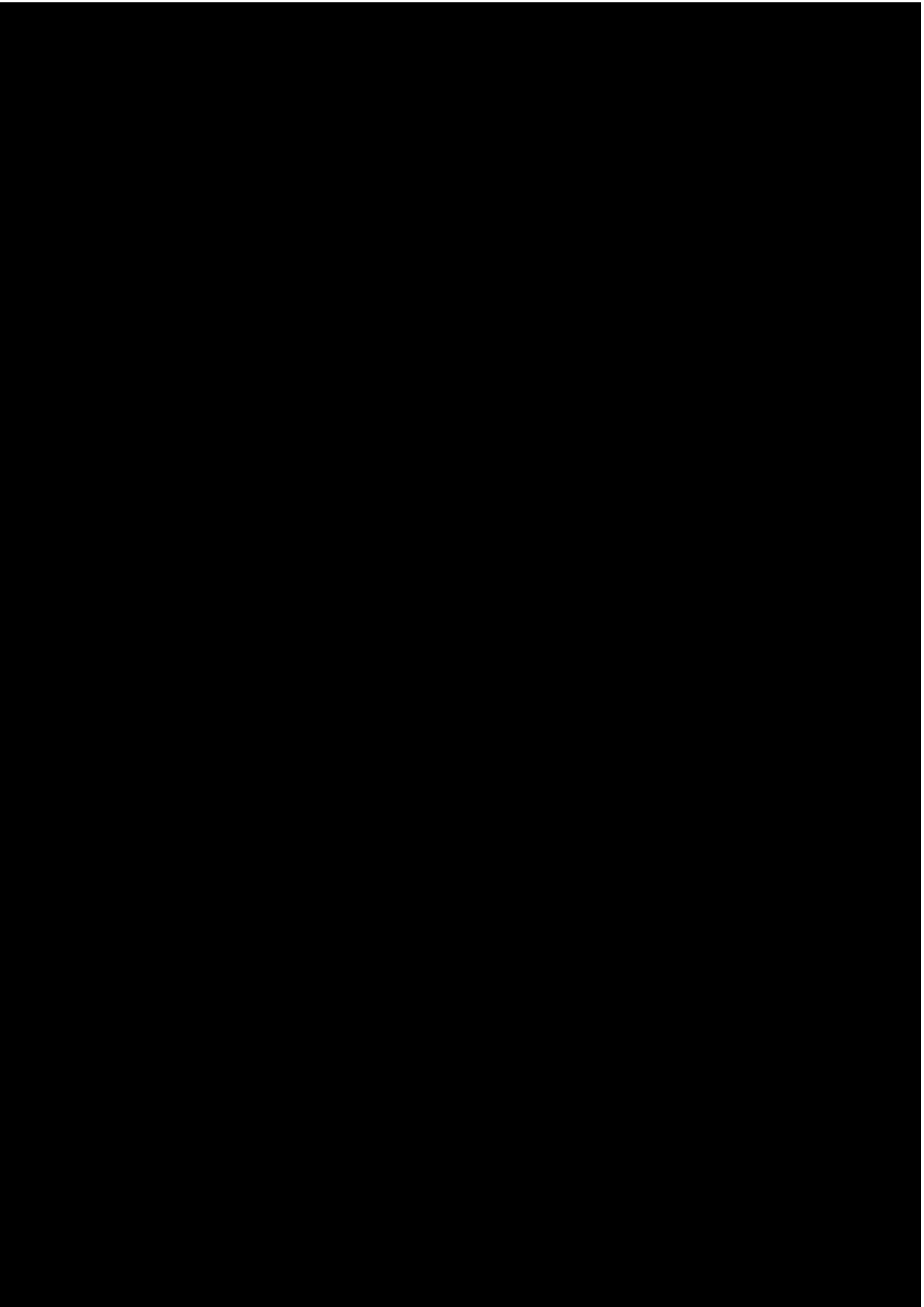




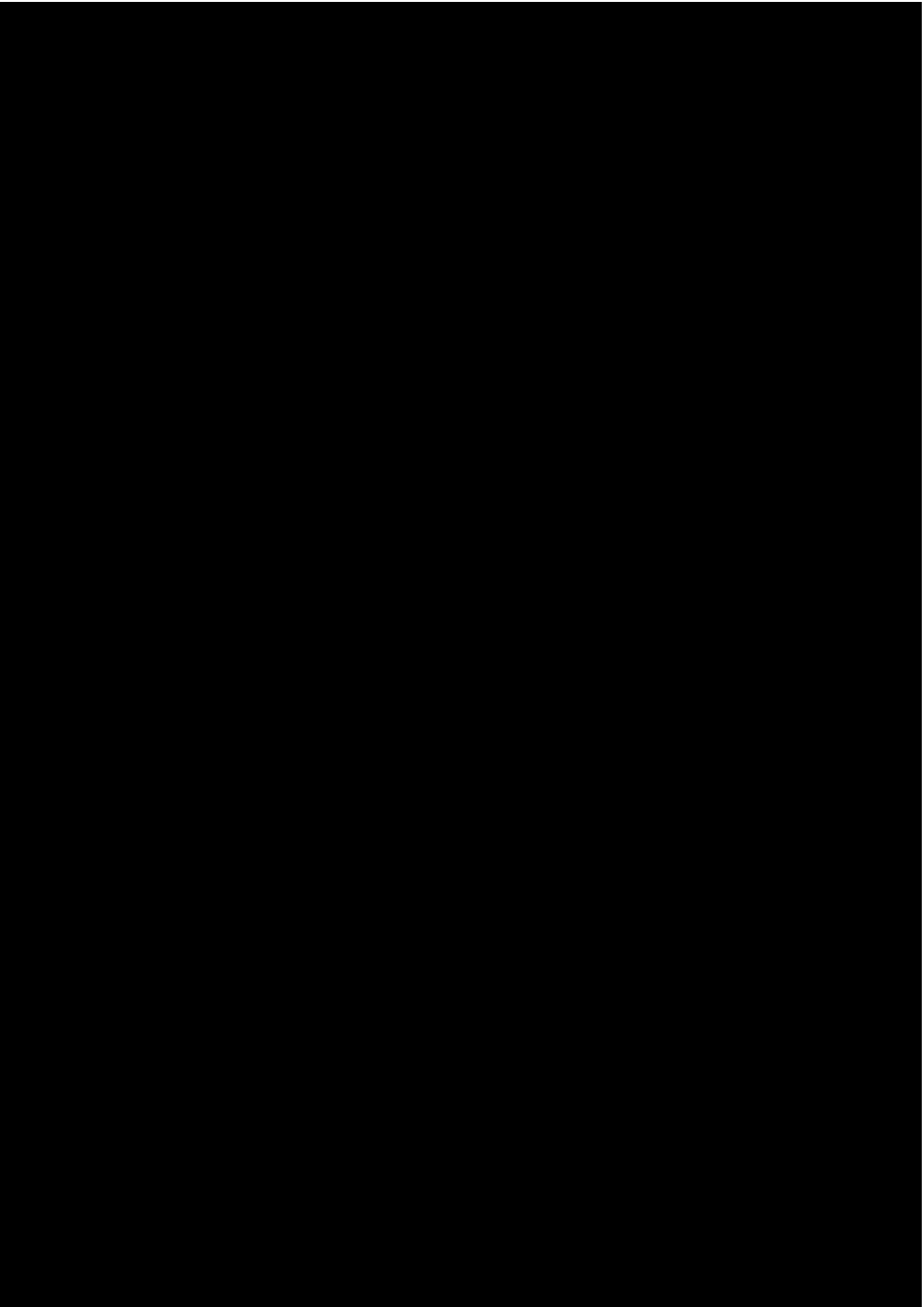




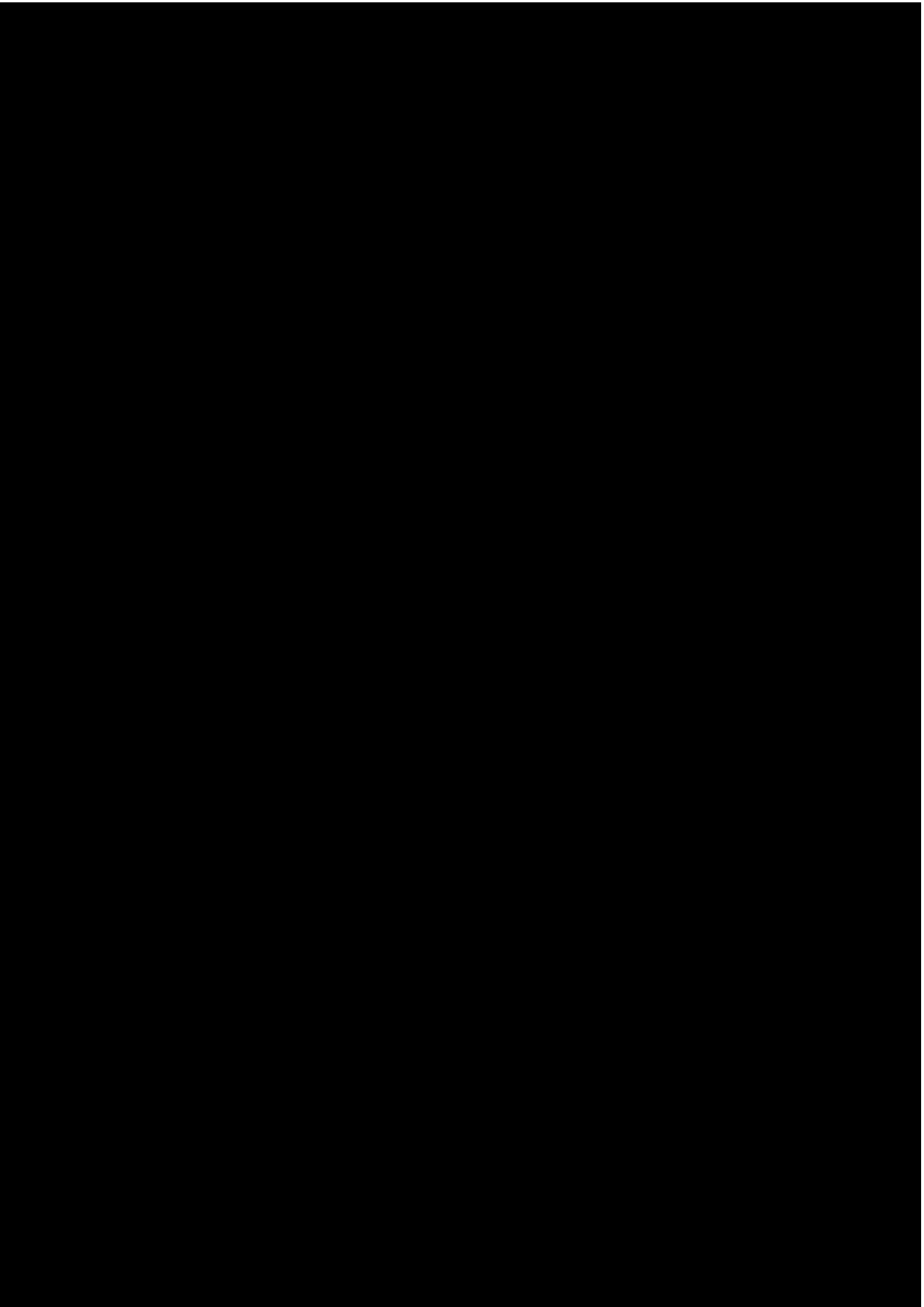






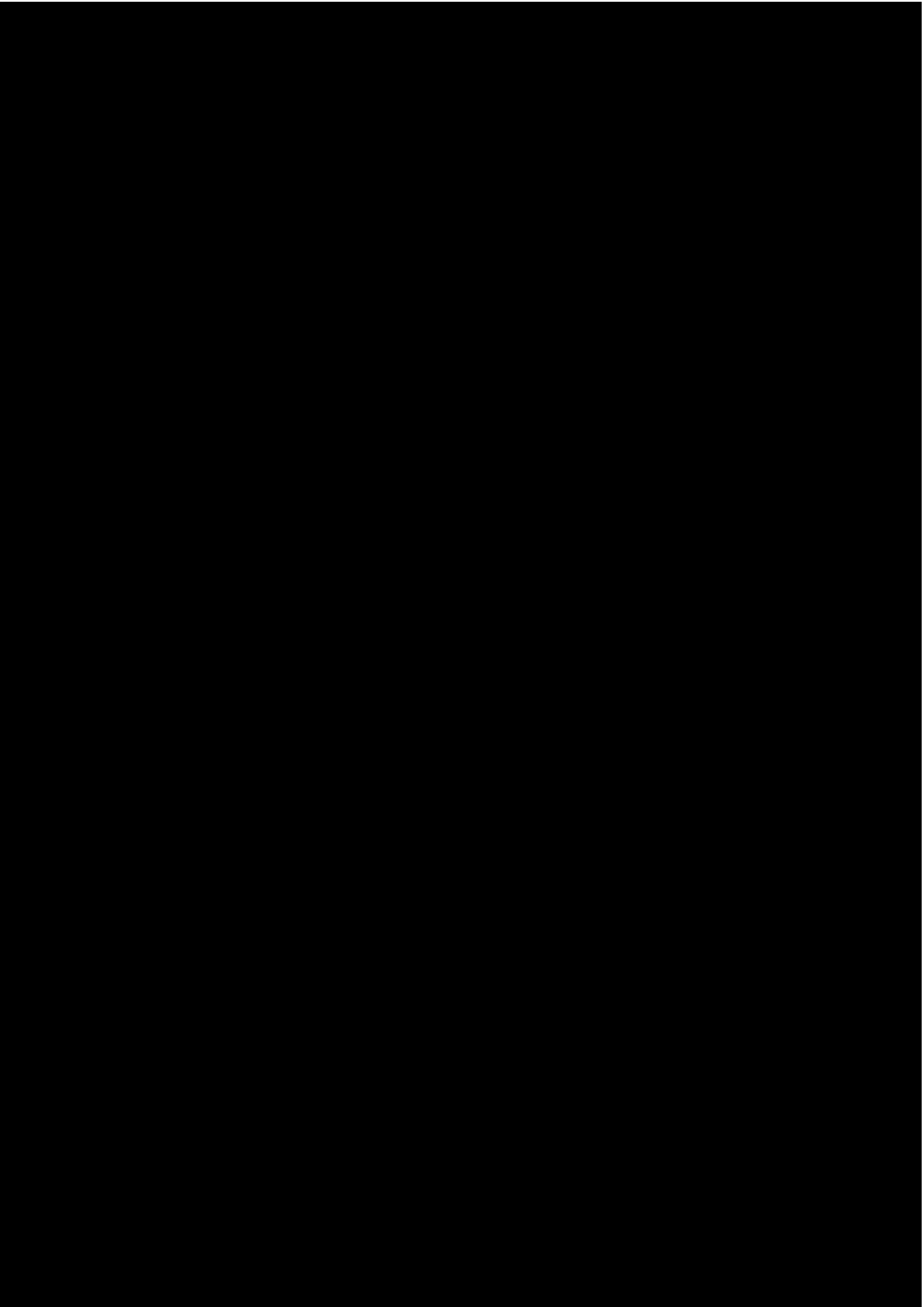














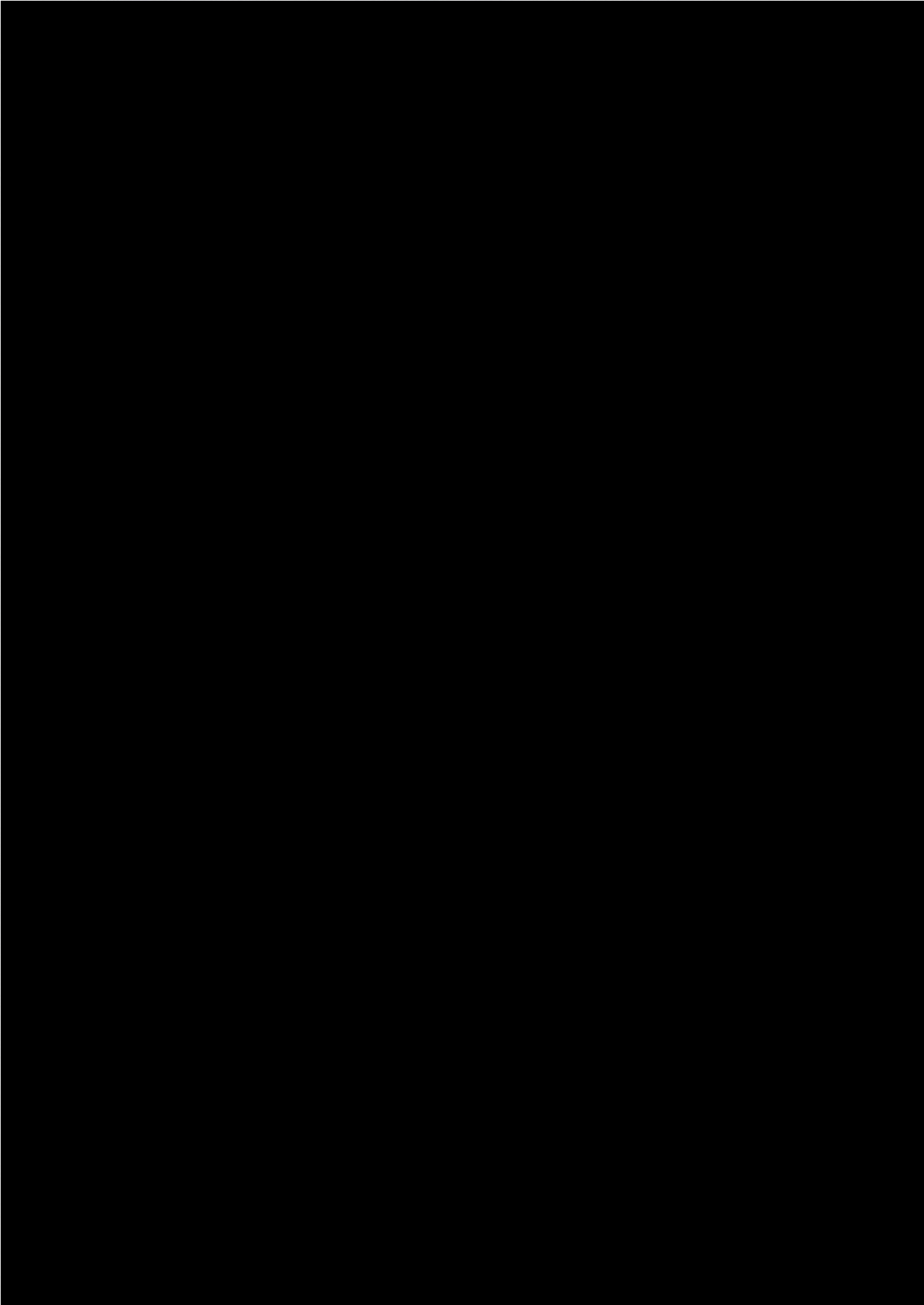


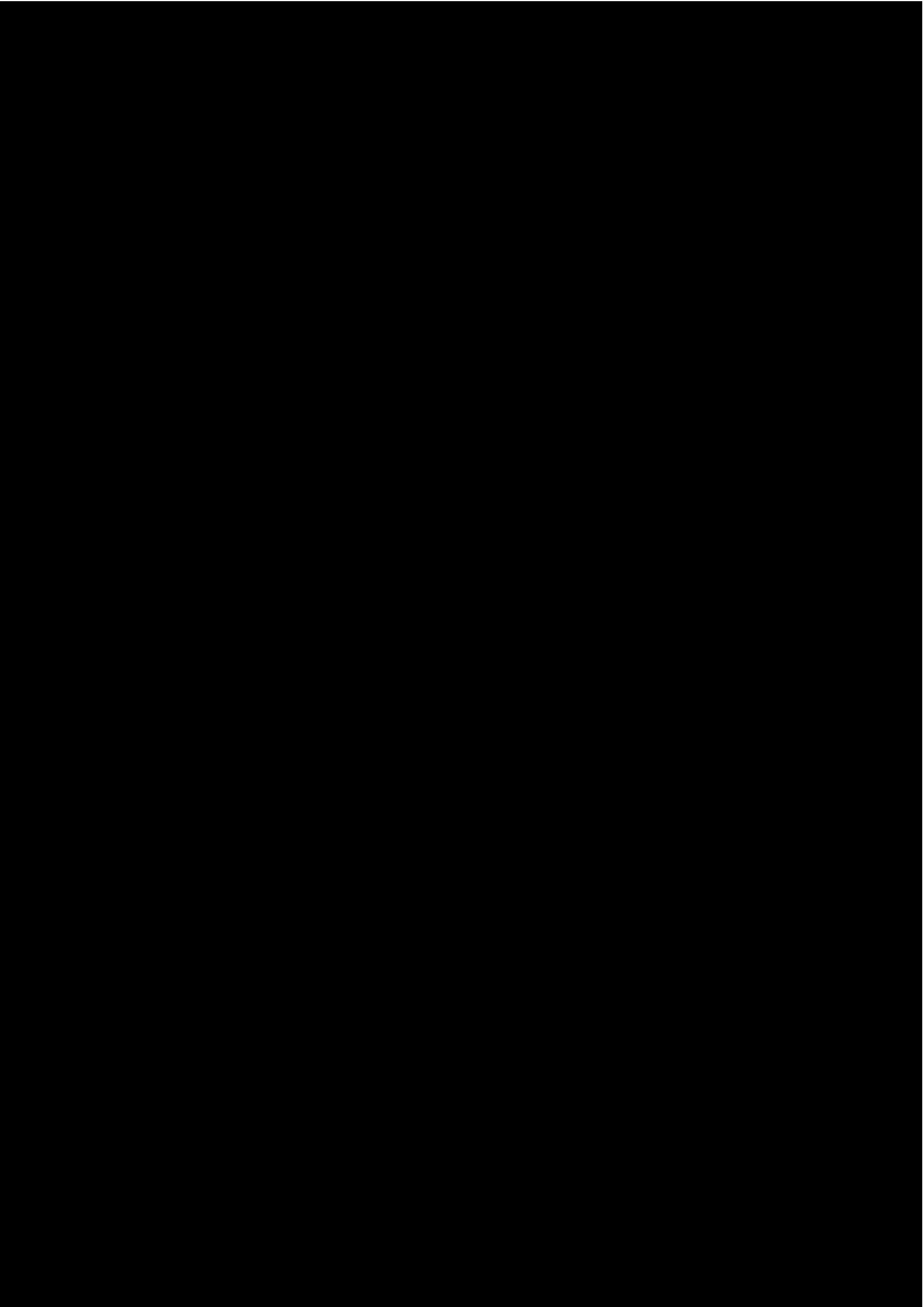
## SCHEDULE 6

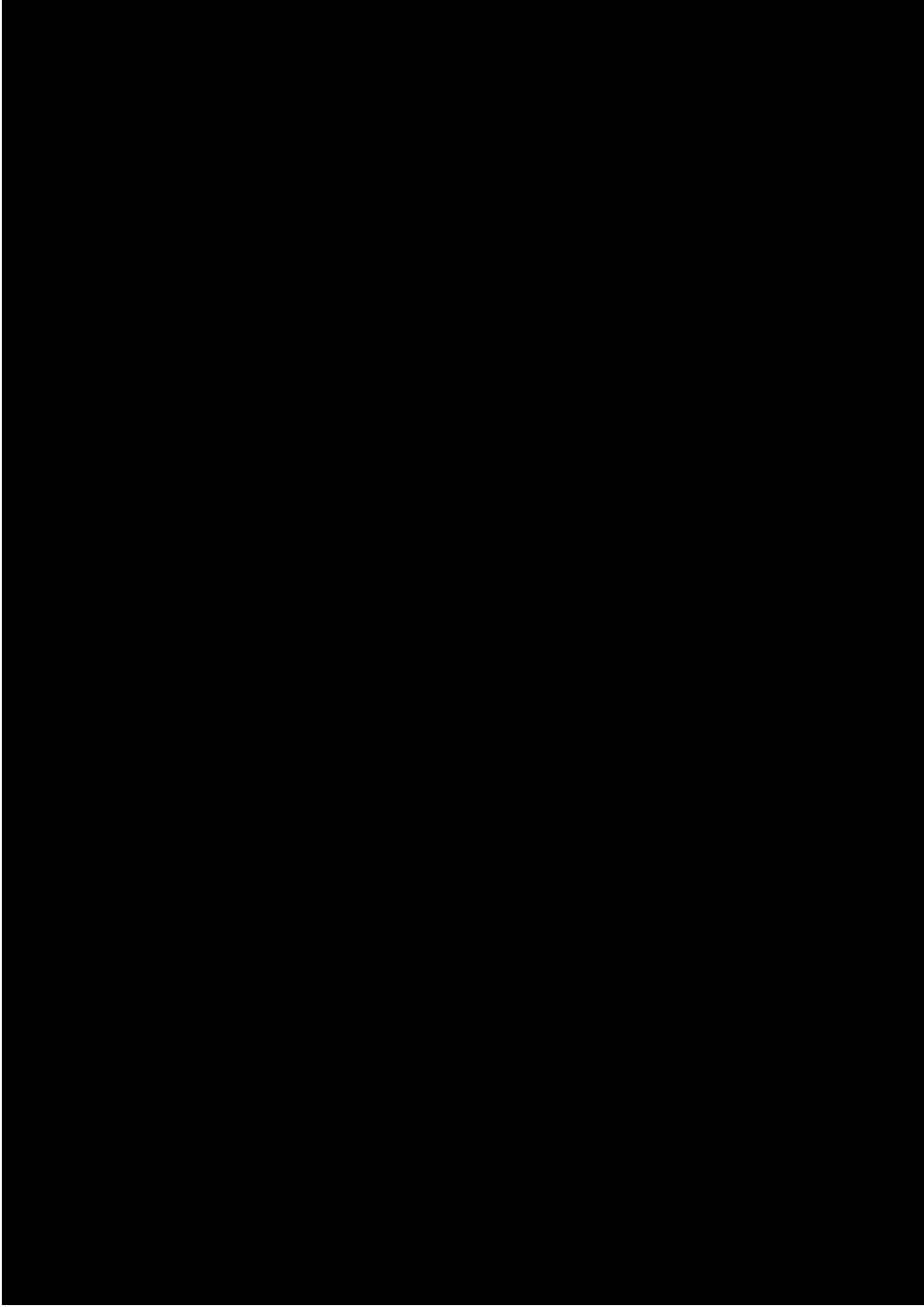
### Amendments to Schedule E4 of the Base SDD

With effect from the Effective Date, Schedule E4 of the Base SDD is deleted and replaced with the version **included** in this Schedule 6, with the amendments to the version included in the Base SDD shown in mark-up.

**SCHEDULE E4  
Delay Costs**

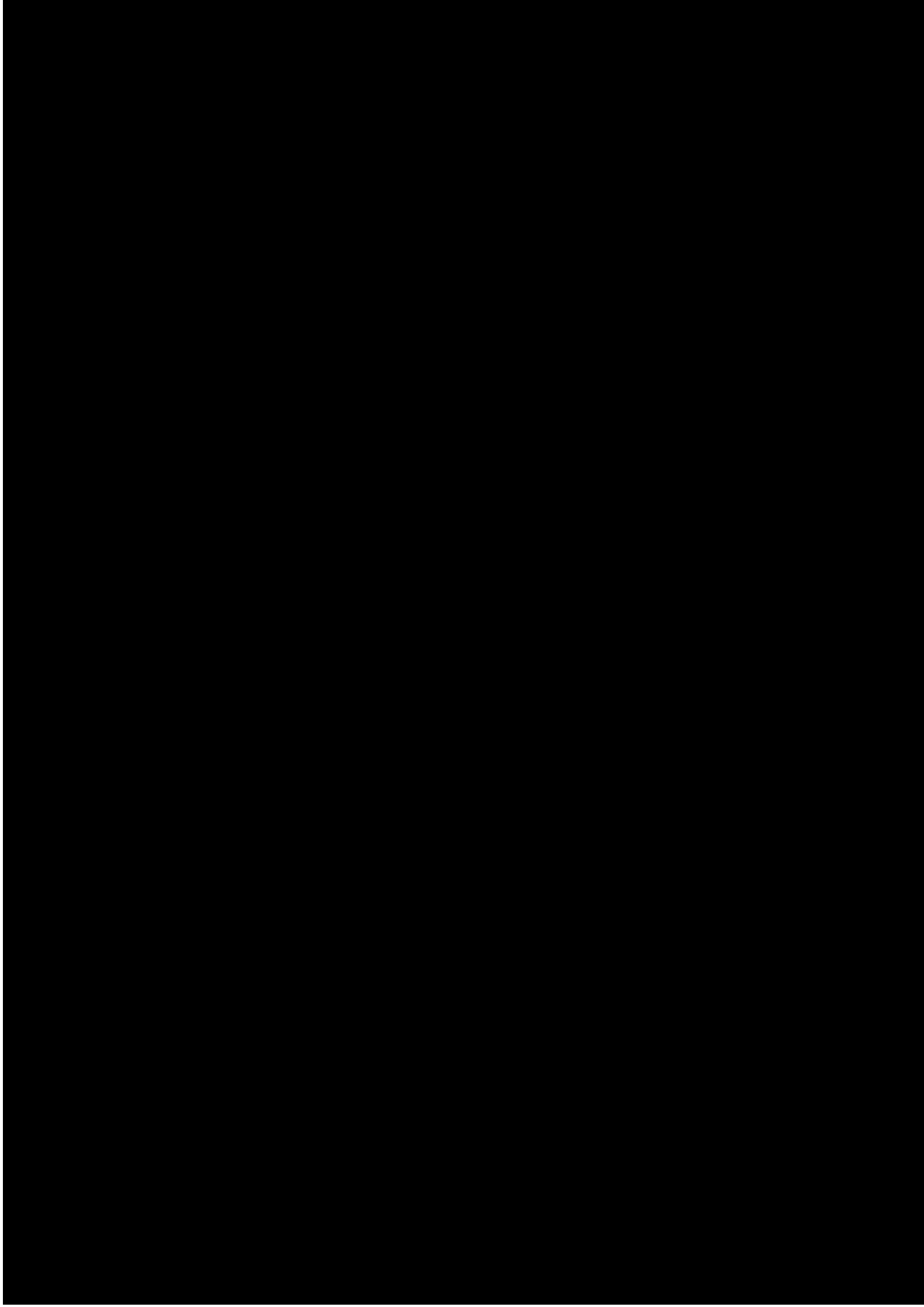












## SCHEDULE 7

### Amendments to Schedule F1 of the Base SDD

With effect from the Effective Date:

- (a) the USB drive titled "USP SDD Schedule F1" is being supplemented by the new USB drive titled "SDD CST DoV – amended Schedule F1" to incorporate the Electronic Files being amended or replaced (as applicable) pursuant to this deed; and
- (b) the Electronic Files that are being replaced pursuant to this deed are set out in the table below:

<b>ITEM</b>	<b>SCHEDULE</b>	<b>DESCRIPTION OF BASE SDD ELECTRONIC FILE</b>	<b>DESCRIPTION OF REPLACEMENT SDD ELECTRONIC FILE</b>
1.	Schedule A02	SMCSWSMP-SMD-SMP-CO-PLN-000959.00.INF.00.01	SMCSWSMP-SMD-SMP-CO-PLN-001309
2.	Schedule A02	SMCSWSMP-SMD-SMP-CO-PLN-000958.00.INF.00.01	SMCSWSMP-SMD-SMP-CO-PLN-001308



SDD CST DoV -  
Amended Schedule F1''

## **SCHEDULE 8**

### **Amendments to Annexure D of the Base SDD**

With effect from the Effective Date, Annexure D of the Base SDD is deleted and replaced with the version **included** in this Schedule 8, with the amendments to the version included in the Base SDD shown in mark-up.

## ANNEXURE D

### Site Access Schedule

#### 1. OVERVIEW AND SCOPE

##### 1.1 General

- (a) This Annexure D identifies:
- (i) the Principal Construction Site;
  - (ii) the Early Site Access Date, Site Access Date, Site Access Expiry Date and Construction Licence Sunset Date for each part of the Principal Construction Site to the extent relevant;
  - (iii) the restrictions on access, possession and use that will apply to Macquarie's access to or use of each part of the Principal Construction Site; and
  - (iv) the restrictions on the type of Project Works or Temporary Works that may be constructed on each part of the Principal Construction Site.
- (b) This Annexure D is subject to the requirements of:
- (i) this deed; and
  - (ii) any other document or condition referred to in this Annexure D or in the "Restrictions upon access, possession and use" column of this Annexure D, and, in particular, must be read in conjunction with clauses 5.1, 10, 11, 12, 13, 17 of this deed.

##### 1.2 References

In this Annexure D, a reference to:

- (a) **Martin Place USP Site Access Plan** is a reference to the drawings described in Table 1 of section 1.3 of this Annexure D;
- (b) **Martin Place Construction Lease** has the meaning given to the term "Construction Lease" in clause 17.2(k);
- (c) an **Area** is a reference to an area of land depicted in the Martin Place USP Site Access Plan with the relevant individual Area reference (e.g. Area "A4");
- (d) **Lot [No.] DP [No.]** are references to land contained in the lots and deposited plans (DPs) registered with LRS as at the Commencement Date under the *Real Property Act 1900* (NSW); and
- (e) **Bligh Street Construction Lease** means sublease registered dealing number AN529079.

##### 1.3 Drawings

This Annexure D contains the drawings identified in Table 1 of this section 1.3, which are included in Schedule F1 as electronic files.

**Table 1 Drawings**

Drawing number	Revision	Drawing title (number of sheets)	Electronic file reference
NWRLSRT-RPS-SMP-SR-DWG-000045-B.3-Martin Place USP Site Access Plan	B.3	Sydney Metro City and Southwest Martin Place Metro Station Project Figure 2.1 Principal Construction Site Drawing (Sheets 1 to 2)	NWRLSRT-RPS-SMP-SR-DWG-000045-B.3-Martin Place USP Site Access Plan

**1.4 Explanation of section 2 to section 7**

- (a) The tables in sections 2 to 7 of this Annexure D comprise 7 columns as follows:
- (i) "Area of Principal Construction Site" specifies the specific parcel of land within the Principal Construction Site;
  - (ii) "Early Site Access Date" is the earliest date on which, if the Principal's Representative gives Macquarie a notice under clause 17.2(e), the Construction Licence in respect of the land referred to in the corresponding "Area of Principal Construction Site" column may commence without acceptance by Macquarie pursuant to clause 17.2(g), and must be read in conjunction with the corresponding "Site Access Expiry Date" and "Restrictions upon access, possession and use" columns;
  - (iii) "Site Access Date" is the date on which the Principal will give Macquarie access to the land referred to in the corresponding "Area of Principal Construction Site" column, and must be read in conjunction with the corresponding "Site Access Expiry Date" and "Restrictions upon access, possession and use" columns;
  - (iv) "Site Access Expiry Date" is the date on which the Principal is no longer required to give Macquarie access to the land referred to in the corresponding "Area of Principal Construction Site" column;
  - (v) "Construction Licence Sunset Date" is the date on which, if the Principal has not provided Macquarie with access to the land referred to in the corresponding "Area of Principal Construction Site" column, clause 45.6 applies (if relevant);
  - (vi) "Restrictions upon access, possession and use" either:
    - (A) contains a cross reference to a document; or
    - (B) specifies terms and conditions,
 with which Macquarie must comply in accessing or occupying the land referred to in the corresponding "Area of Principal Construction Site" column; and

- (vii) "Restrictions on type of work" are the restrictions on the type of work that may be carried out by Macquarie on the land referred to in the corresponding "Area of Principal Construction Site" column.

**1.5 General terms and restrictions upon access**

The "Restrictions upon access, possession and use" columns of sections 2 to 7 do not limit Macquarie's obligations to comply with this deed (including the SWTC) or the Project Plans.

**1.6 Boundaries**

- (a) Subject to section 1.6(b), each Area in the Martin Place USP Site Access Plan contains the land enclosed by the plan area represented for that Area in the Martin Place USP Site Access Plan.
- (b) Areas in the Martin Place USP Site Access Plan are unrestricted in height and depth above and below the plan area represented in the Martin Place USP Site Access Plan, unless a limit is specified in the Martin Place USP Site Access Plan or this Annexure D.
- (c) Where boundaries of the Principal Construction Site are identified as curved in the Martin Place USP Site Access Plan, the boundary is defined by the schedule of curved boundaries.



**2. PRINCIPAL LAND FORMING AREA 1 OF THE PRINCIPAL CONSTRUCTION SITE**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
1.	The part of Lot 1 DP526161 that is above RL 16.05.					Local intrusions and minor benching works beneath RL 16.05 for the purpose of retention works and ground anchoring are permissible.	N/A

**3. PRINCIPAL LAND FORMING AREA 2 OF THE PRINCIPAL CONSTRUCTION SITE**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
1.	The part of Lot 2 DP929277 that is between RL 16.05 and RL 32.19.					Local intrusions and minor benching works beneath RL 16.05 for the purpose of retention works and ground anchoring are permissible.	N/A

**Proposed base for CST DoV Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
2.	The part of Lot 1 DP929277 that is between RL 16.05 and RL 32.19.					Local intrusions and minor benching works beneath RL 16.05 for the purpose of retention works and ground anchoring are permissible.	N/A
3.	The part of Lot 1 DP173027 that is between RL 16.05 and RL 32.19.					Local intrusions and benching works beneath RL 16.05 for the purpose of retention works and ground anchoring are permissible.	N/A
4.	The part of SP13171 that is between RL 16.05 and RL 32.19.					Local intrusions and minor benching works beneath RL 16.05 for the purpose of retention works and ground anchoring are permissible.	N/A

**Proposed base for ~~EST DoV~~ Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
5.	The part of Lot 2 DP548142 that is between RL 16.05 and RL 32.19.	[REDACTED]				Local intrusions and minor benching works beneath RL 16.05 for the purpose of retention works and ground anchoring are permissible.	N/A
6.	The part of Lot 1 DP222356 that is between RL 16.05 and RL 32.19.					Local intrusions and minor benching works beneath RL 16.05 for the purpose of retention works and ground anchoring are permissible.	N/A

**4. PRINCIPAL LAND FORMING AREA 3 OF THE PRINCIPAL CONSTRUCTION SITE**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
1.	The part of Lot 1 DP526161 that is below RL 16.05 and the part of Lot 131 in DP 1232469 located within Lot 1 DP526161.	[REDACTED]				N/A	N/A

**Proposed base for CST DoV Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
2.	The part of Lot 2 DP929277 that is below RL 16.05.					N/A	N/A
3.	The part of Lot 1 DP929277 that is below RL 16.05.					N/A	N/A
4.	The part of Lot 1 DP173027 that is below RL 16.05.					N/A	N/A
5.	The part of SP13171 that is below RL 16.05.					N/A	N/A
6.	The part of Lot 2 DP548142 that is below RL 16.05.					N/A	N/A
7.	The part of Lot 1 DP222356 that is below RL 16.05.					N/A	N/A

**5. PRINCIPAL LAND FORMING AREA 4 OF THE PRINCIPAL CONSTRUCTION SITE**



**Proposed base for CST DoV Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
1.	The part of Lot 2 DP1103195 that is below RL 32.10.					N/A	N/A
2.	The part of Lot 1 DP1103195 that is below RL 32.10.					N/A	N/A
3.	The part of R88056 above Lot 1 DP260232.					Access is subject to the "Permitted Use" (as that term is defined in the Martin Place Construction Lease) and handover obligations of the Martin Place Construction Lease.	The only works that may be constructed in this area are Local Area Works and Service Works
4.	Lot 1 DP260232					N/A	
5.	Lot 5 DP984182					Access is subject to the "Permitted Use" (as that term is defined in the Martin Place Construction Lease) and handover obligations of the Martin Place Construction Lease.	The only works that may be constructed in this area are Local Area Works and Service Works

**Proposed base for CST DoV Schedule 8 – Amendments to Annexure D of the Base SDD**

6.	The area where the concourse link tunnel will be excavated by Macquarie as shown indicatively in the Martin Place USP Site Access Plan to the extent located below Lot 1 DP182023 that is located within the Principal's Land.					N/A	N/A
7.	<p>To the extent not covered by rows 1-6 of this table, the areas excavated by the TSE Contractor under the TSE Contract being:</p> <p>(a) the entirety of the adits known as "Adit A5a" and "Adit A5b", from the excavation line of the south shaft to the collar of the intersection with running tunnels known as "RT02" and "RT01", respectively;</p> <p>(b) the entirety of the adit known as "Adit A4", including the connection to the Sydney Trains Martin Place Station Platform and hoarding area;</p>						

**Proposed base for CST DoV Schedule 8 – Amendments to Annexure D of the Base SDD**

	<p>(c) the entirety of the adit known as "Adit A8", including the elevator shaft;</p>						
	<p>(d) the entirety of the adit known as "Adit A7", up to the point of intersection with the adit known as "Adit A3"; and</p>						
	<p>(e) the escalator barrel excavation under 50 Martin Place, up to within 1 metre from the opening to the adit known as "Adit A3".</p>						



**6. PRINCIPAL LAND FORMING AREA 5 OF THE PRINCIPAL CONSTRUCTION SITE**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
1.	<p>The area excavated by the TSE Contractor under the TSE Contract that is shown indicatively as Area 5 in the Martin Place USP Site Access Plan to the extent located within Lot 131 DP1232469 and Lot 132 in DP 1232469 and including:</p> <p>(a) the entirety of the Martin Place Pedestrian Adits; and</p> <p>(b) the entirety of Martin Place Platform Caverns, but excluding all areas of the Running Tunnels that extend beyond the northern and southern headwalls for both RT01 and RT02.</p>					N/A	N/A

**7. AREA 6 OF THE PRINCIPAL CONSTRUCTION SITE**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
1.	Lot 1 DP 626651					<p>Access is subject to the "Permitted Use" (as that term is defined in the Bligh Street Construction Lease)</p> <p><u>Macquarie must make Construction Site (Area 6) accessible to the LW Contractor for minor deliveries from [REDACTED] through to [REDACTED]</u></p>	<p>Except where and to the extent that the Principal directs a Variation requiring Macquarie to undertake works in Construction Site (Area 6), Macquarie is not permitted to carry out any permanent works in Construction Site (Area 6).</p> <p>Construction Site (Area 6) is to be used solely for:</p> <p>(a) temporary works but</p>

**Proposed base for ~~CST DoV~~ Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
							<p>only to the extent:</p> <p>(i) required to facilitate the performance of permanent works in Construction Site (Area 3), Construction Site (Area 4) and Construction Site (Area 5); and</p> <p>(ii) such works do not obstruct the use of Construction Site (Area 6) by the TSE Contractor <u>on or before the Area 6 PC Date</u> or</p>

**Proposed base for CST DoV Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
							other Rail Contractors;  (b) ingress and egress; and  (c) performing any maintenance to Construction Site (Area 6) required by this deed.
2.	The temporary access adit excavation and primary support between the south-eastern basement wall of Lot 1 DP 626651 and the northern face of the area known as "Area 3" which includes part of the adit known as "Adit A6" but excludes the adit known as "Adit A6a".	[REDACTED]				<a href="#">Macquarie must make Construction Site (Area 6) accessible to the LW Contractor for minor deliveries from [REDACTED] through to [REDACTED]</a>  N/A	Except where and to the extent that the Principal directs a Variation requiring Macquarie to undertake works in Construction Site (Area 6), Macquarie is not permitted to carry out any

**Proposed base for ~~EST DoV~~ Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
							<p>permanent works in Construction Site (Area 6).</p> <p>Construction Site (Area 6) is to be used solely for:</p> <p>(a) temporary works but only to the extent:</p> <p>(i) required to facilitate the performance of permanent works in Construction Site (Area 3), Construction Site (Area 4) and Construction Site (Area 5); and</p> <p>(ii) such works do not</p>

**Proposed base for CST DoV Schedule 8 – Amendments to Annexure D of the Base SDD**

No	Area of Principal Construction Site	Early Site Access Date	Site Access Date	Site Access Expiry Date	Construction Licence Sunset Date	Restrictions upon access, possession and use	Restrictions on type of work
							<p>obstruct the use of Construction Site (Area 6) by the TSE Contractor <u>on or before the Area 6 PC Date</u> or other Rail Contractors;</p> <p>(b) ingress and egress; and</p> <p>(c) performing any maintenance to Construction Site (Area 6) required by this deed.</p>

**SCHEDULE 9**

**Updated SDD Program**

This Schedule 9 is contained in the USB titled "SDD DoV - Schedule 9".

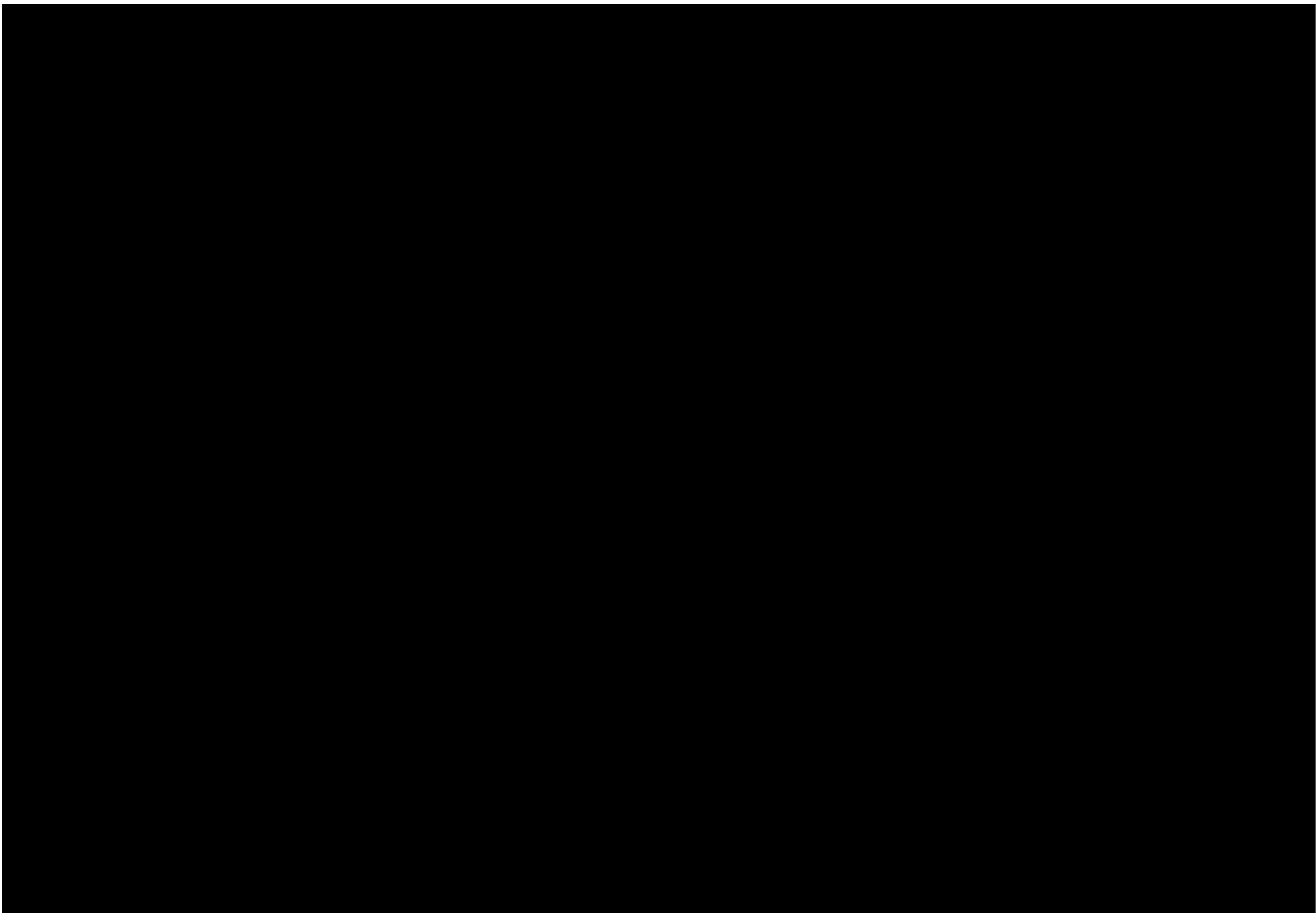


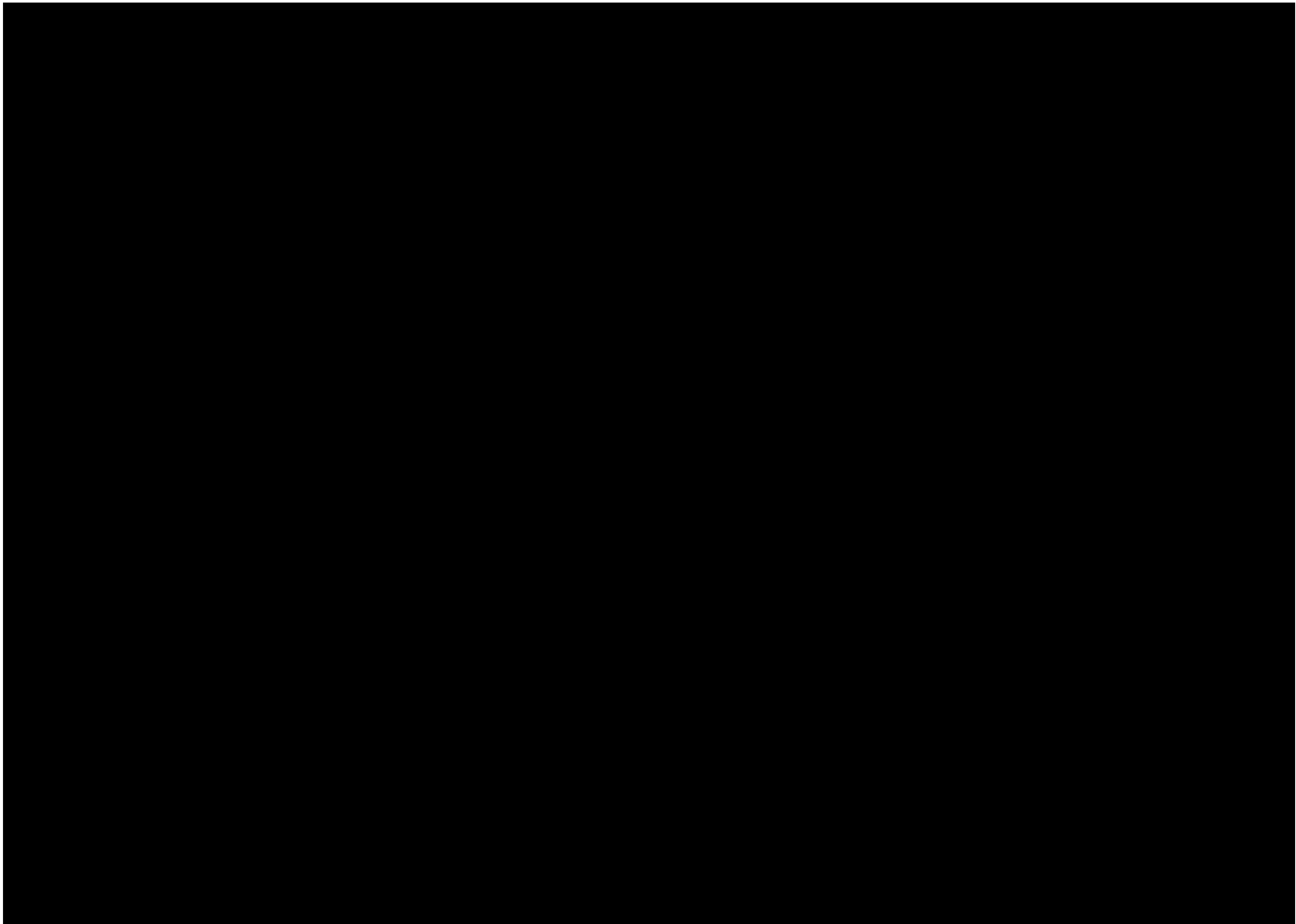
SDD DoV - Schedule 9

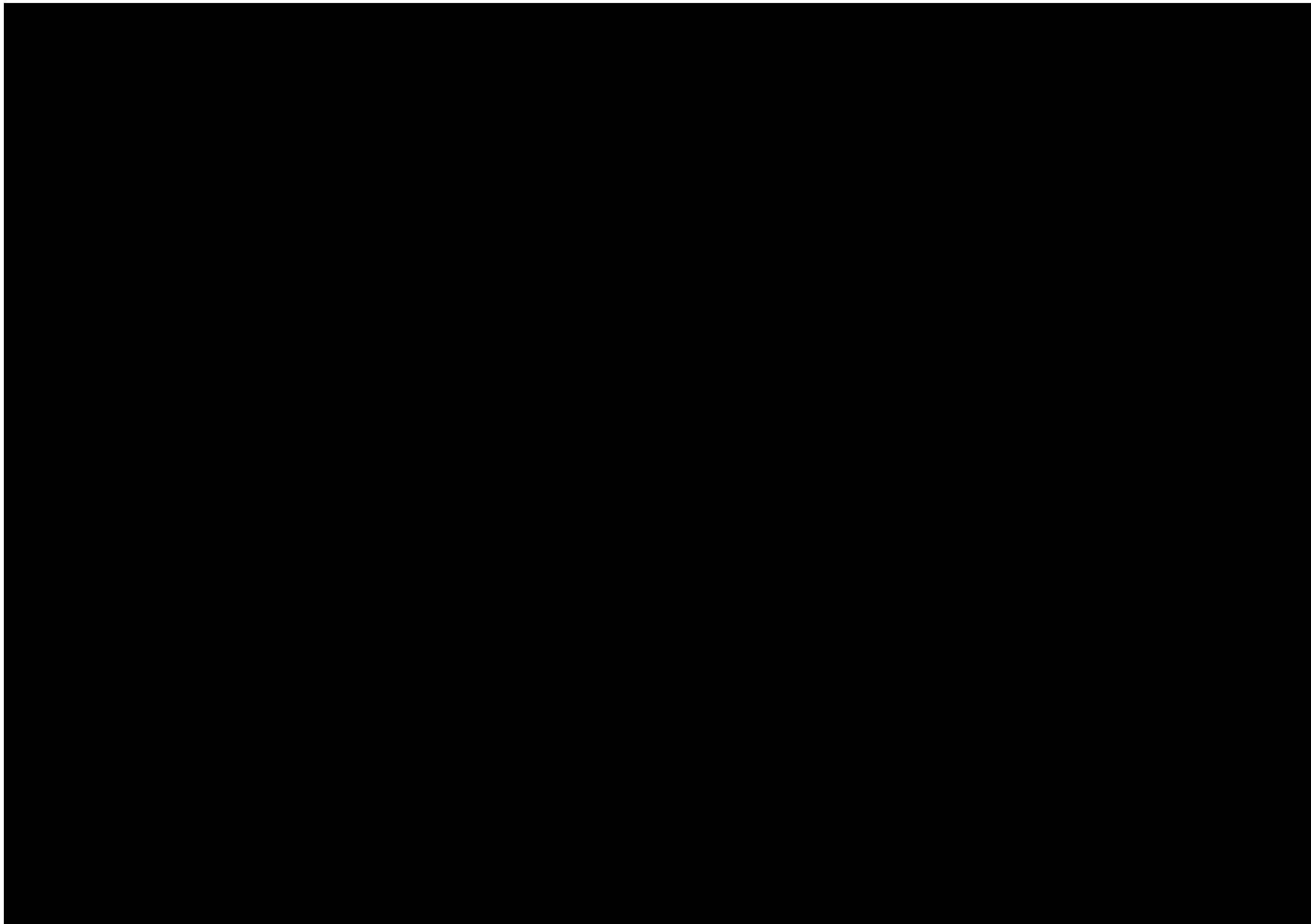


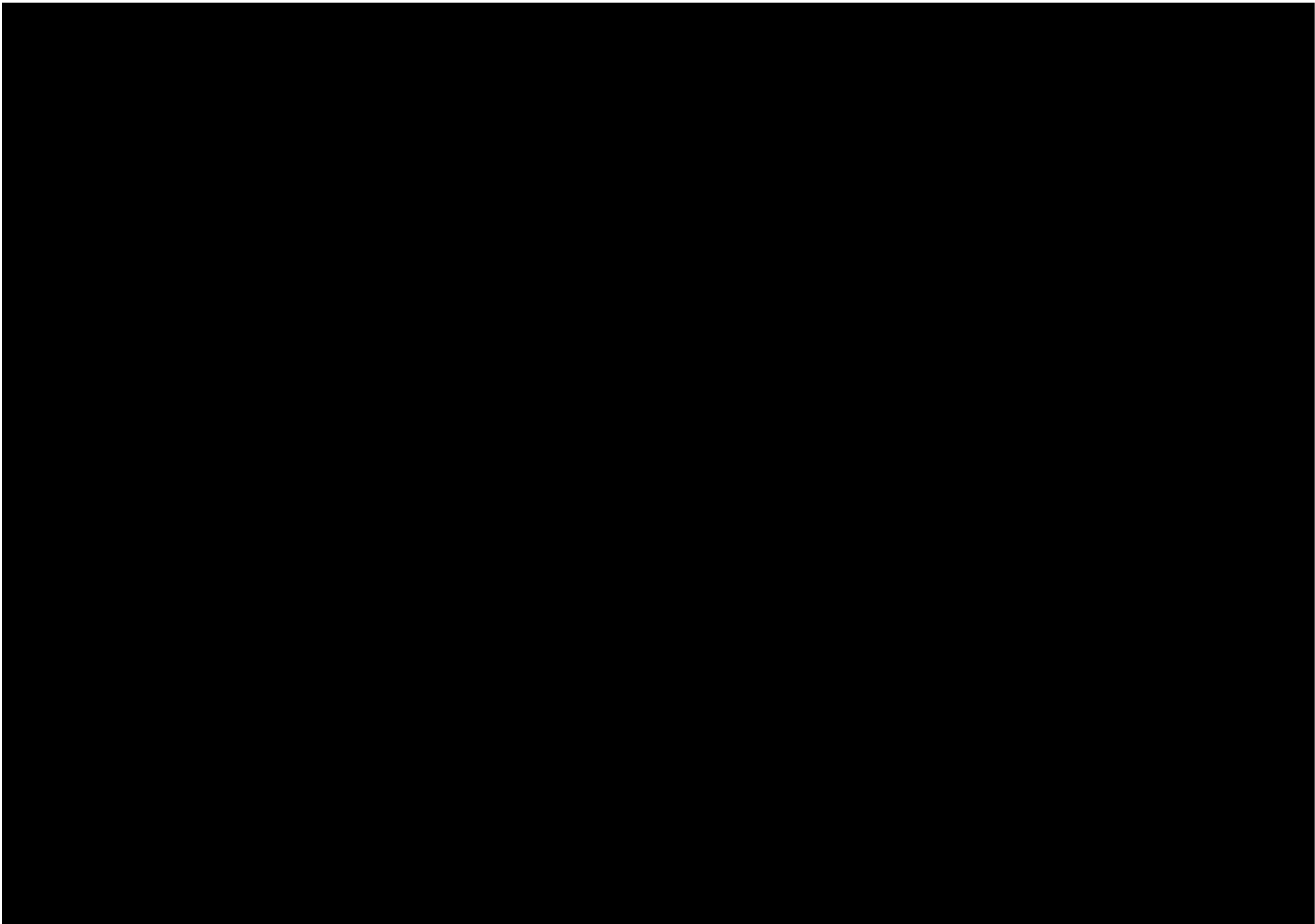


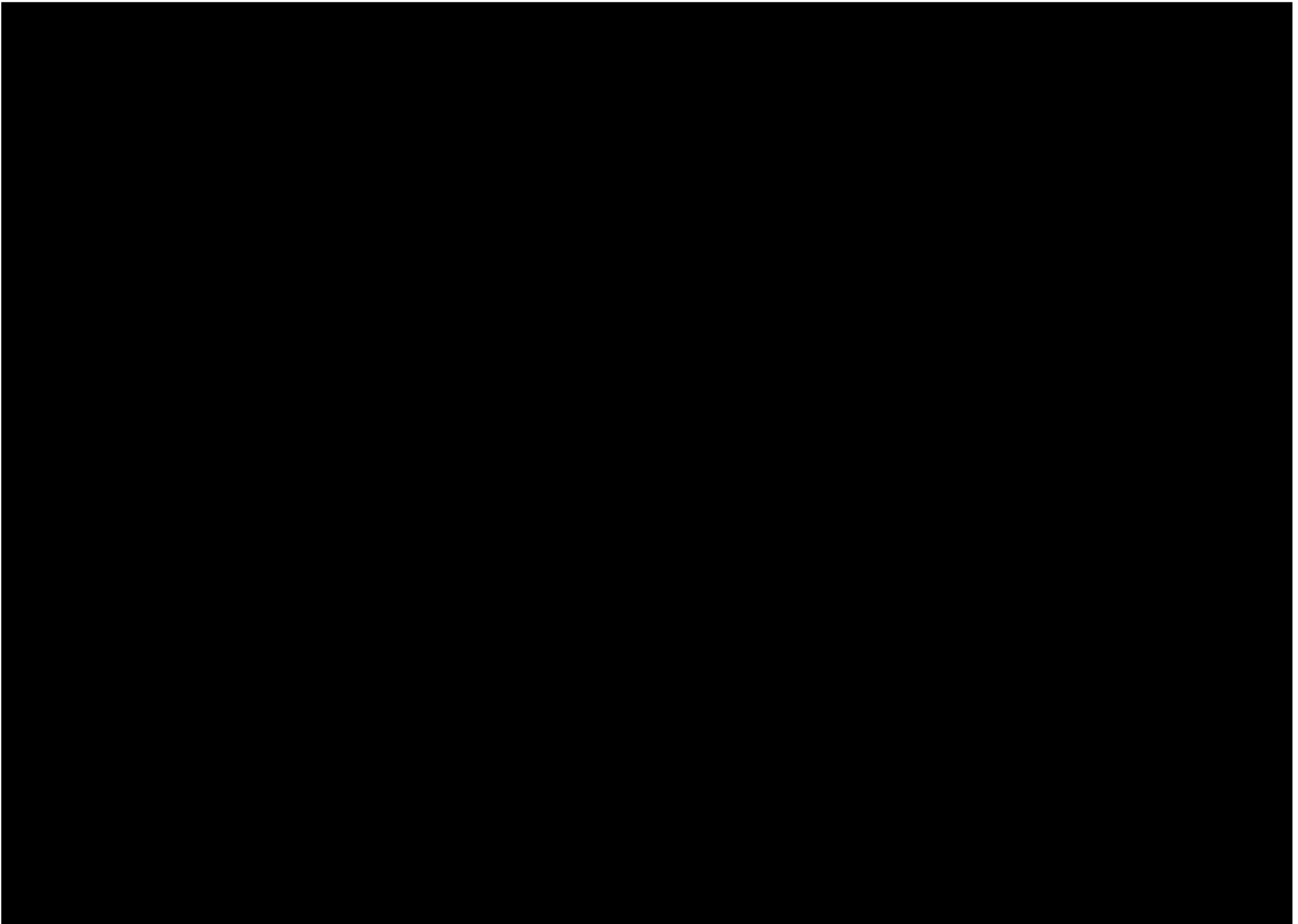


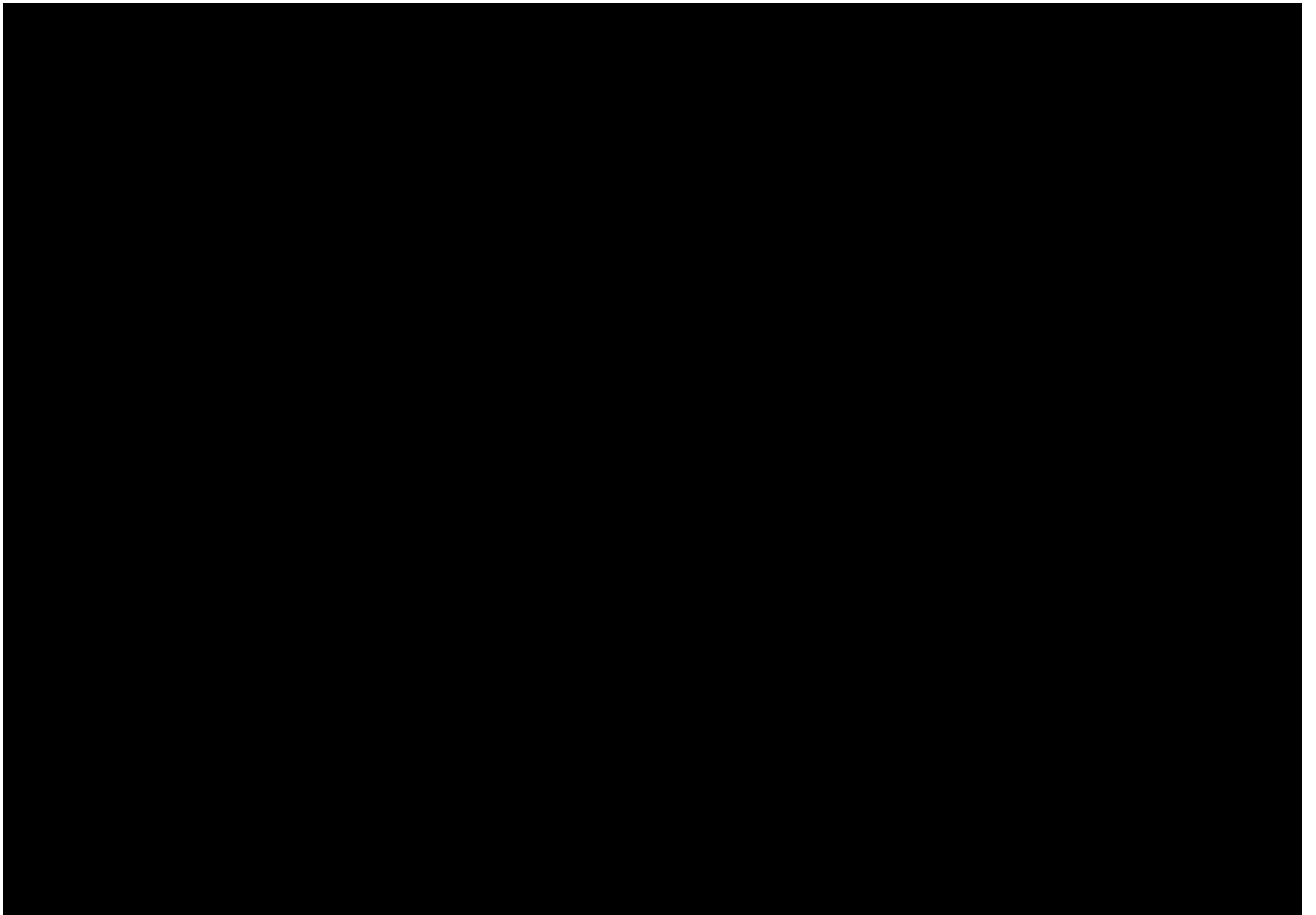




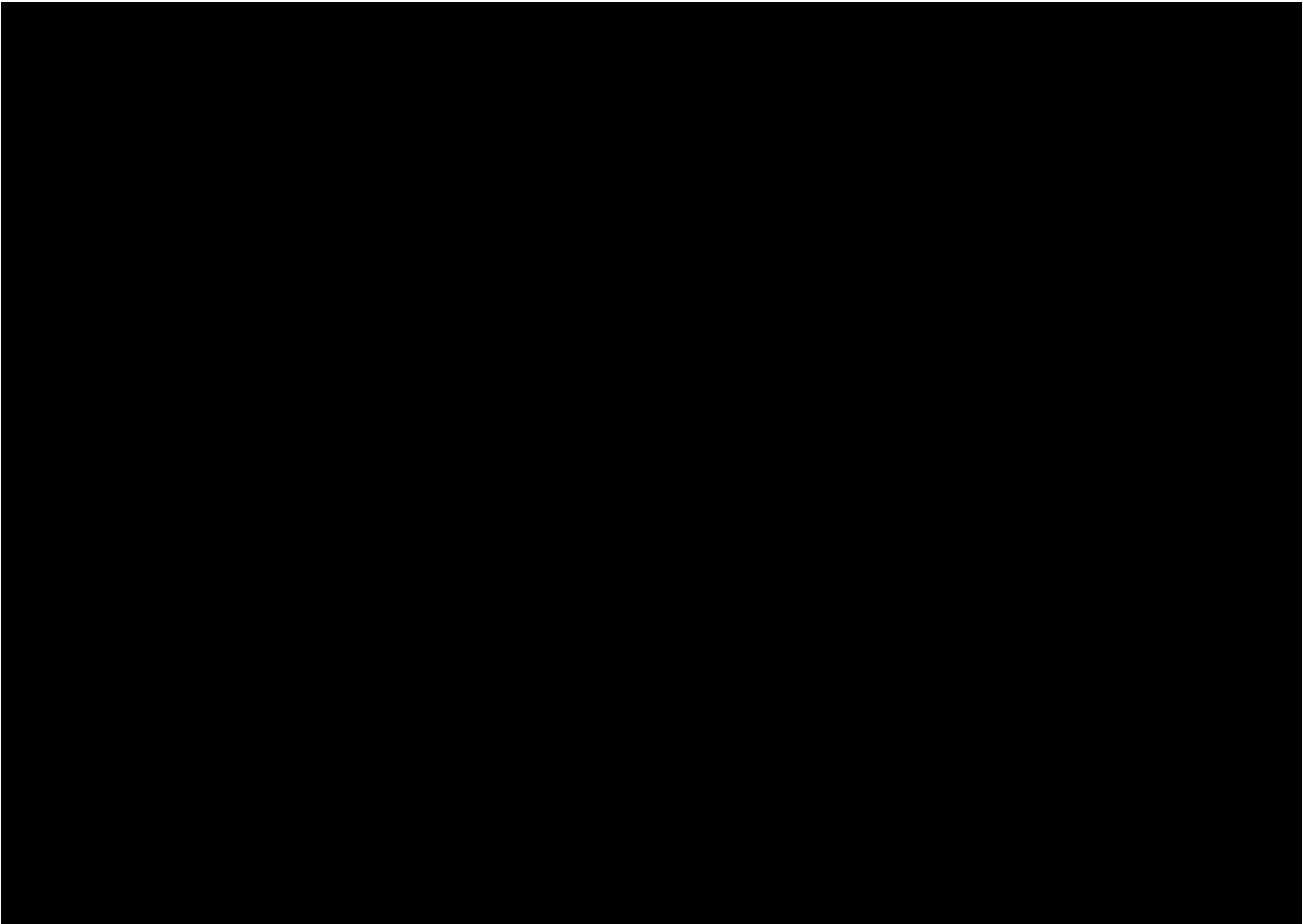


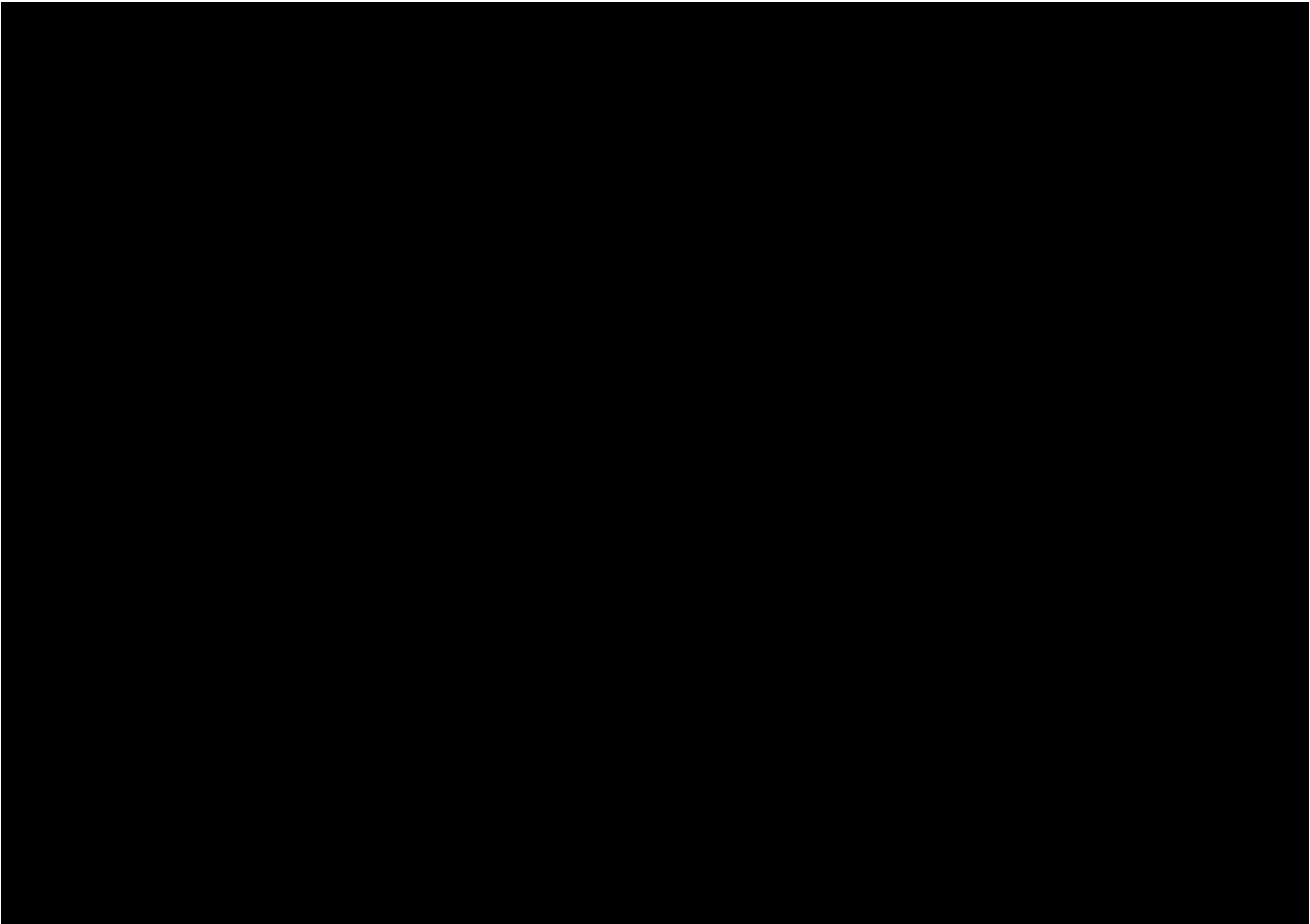


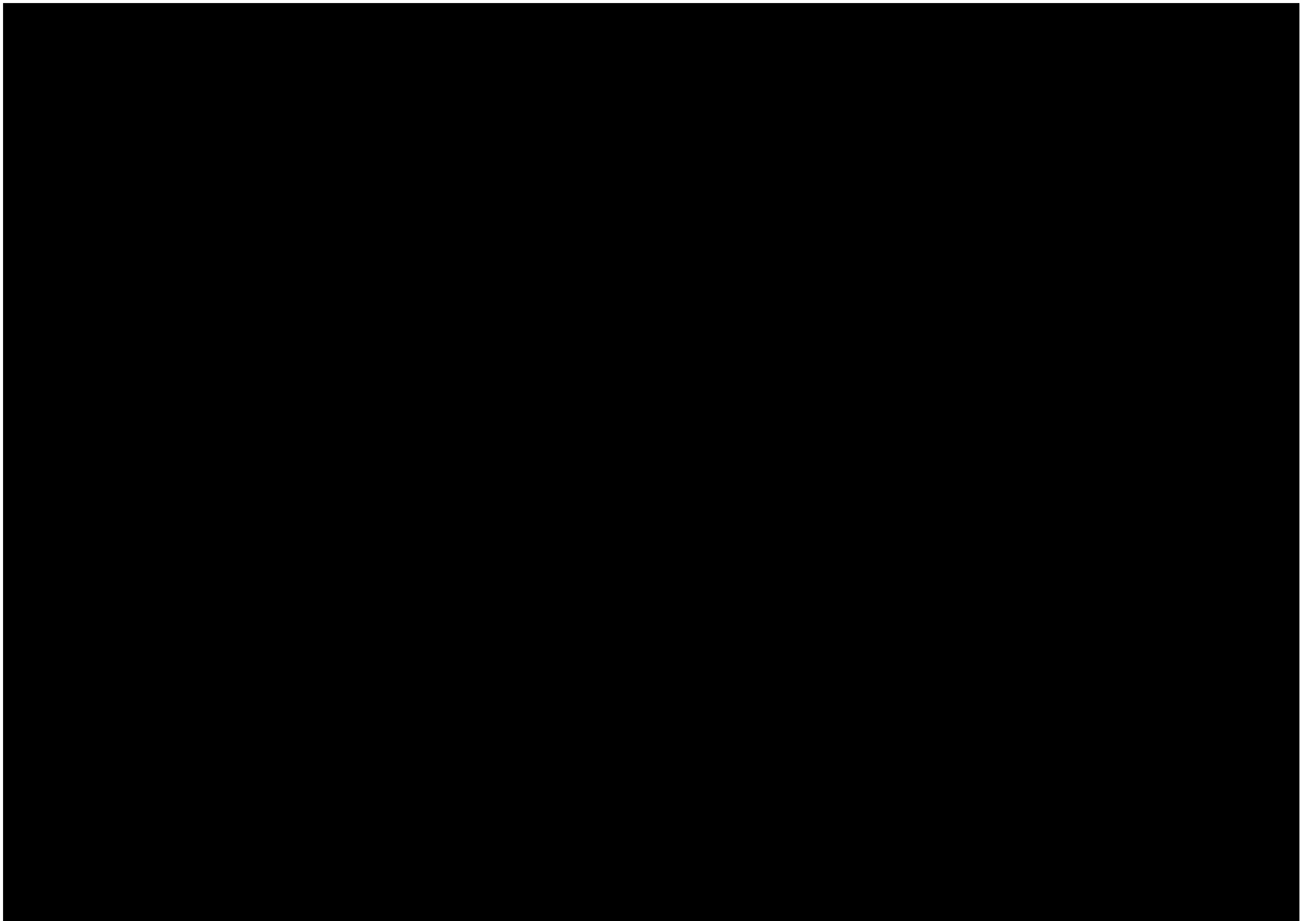


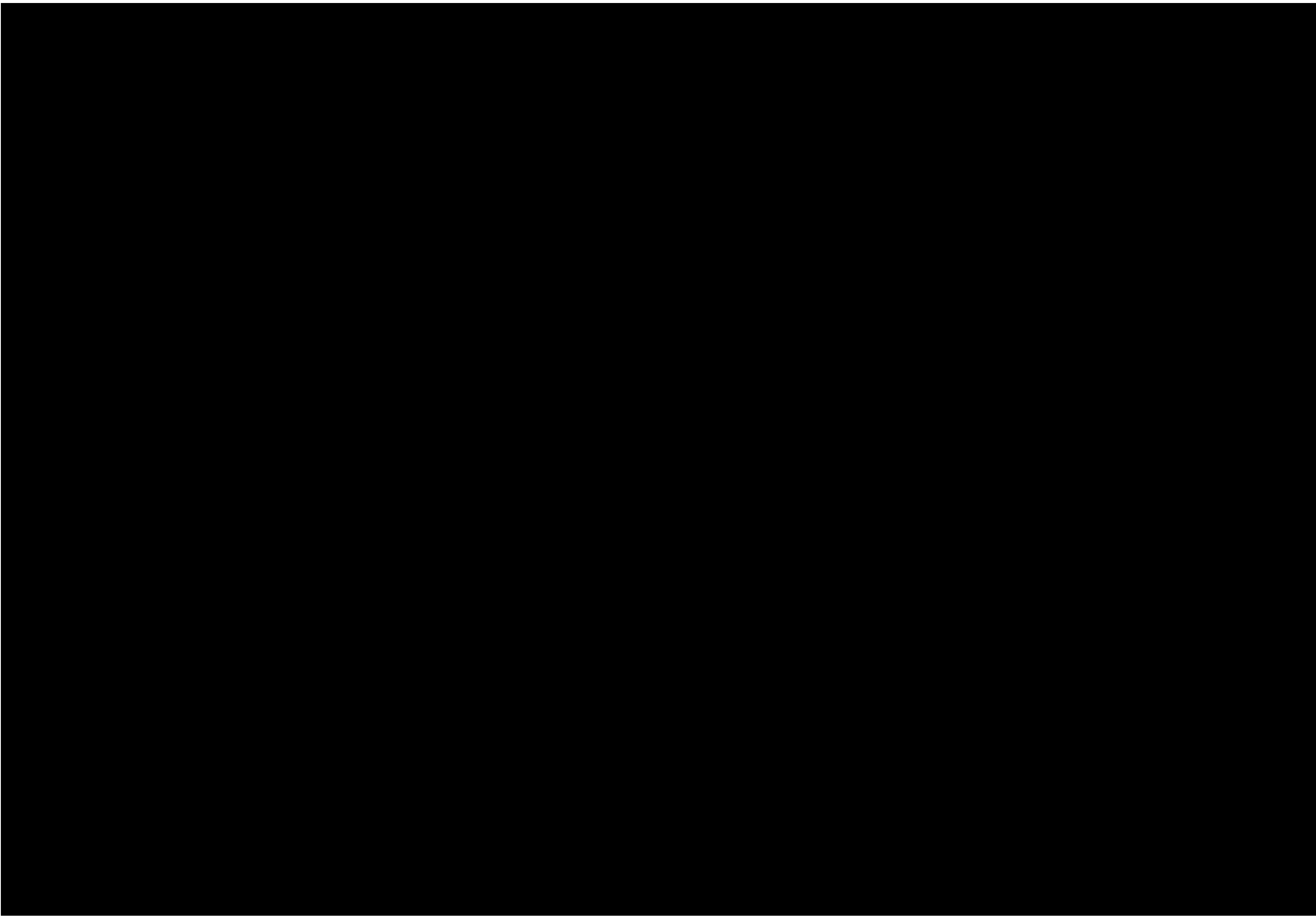


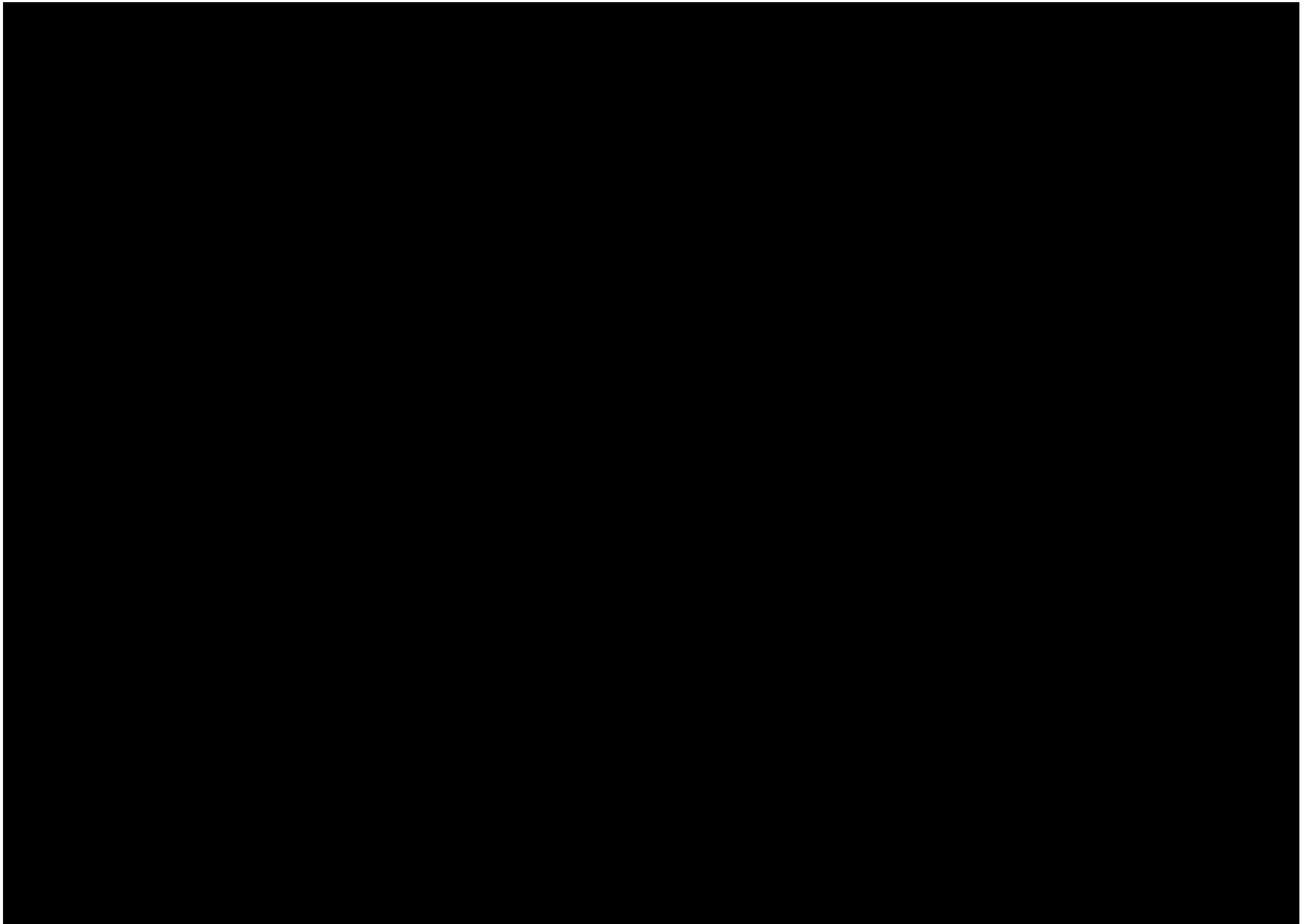


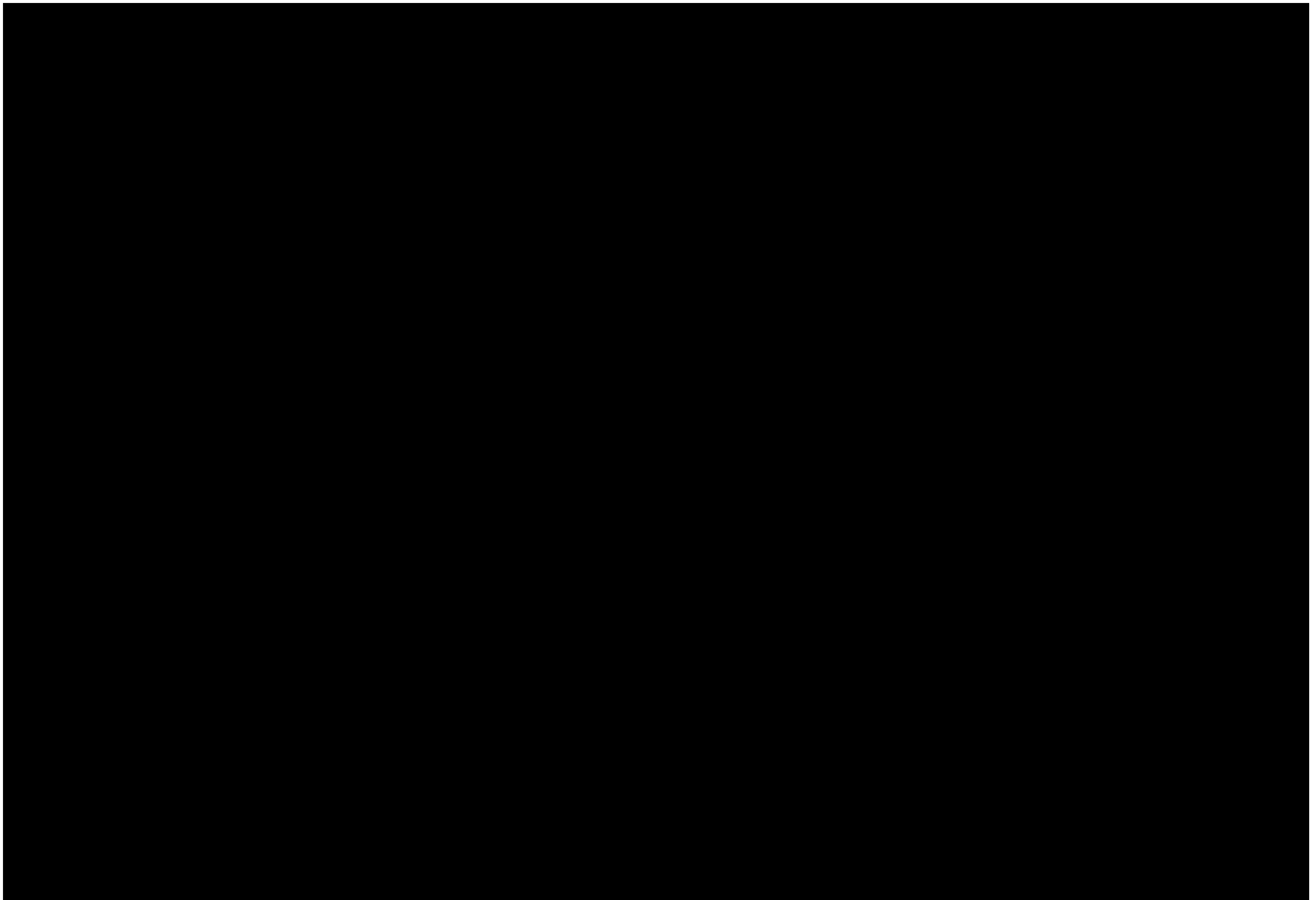


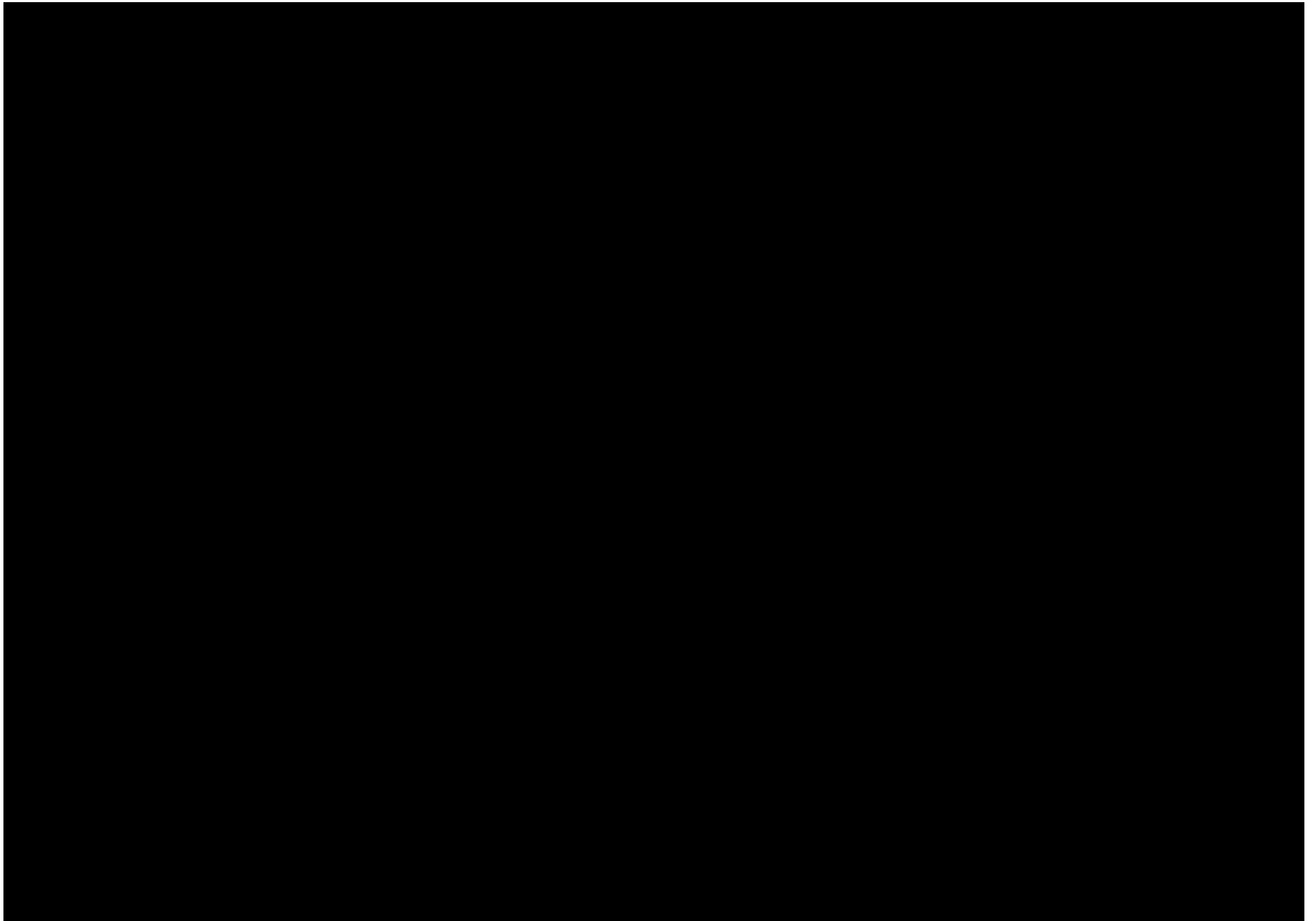


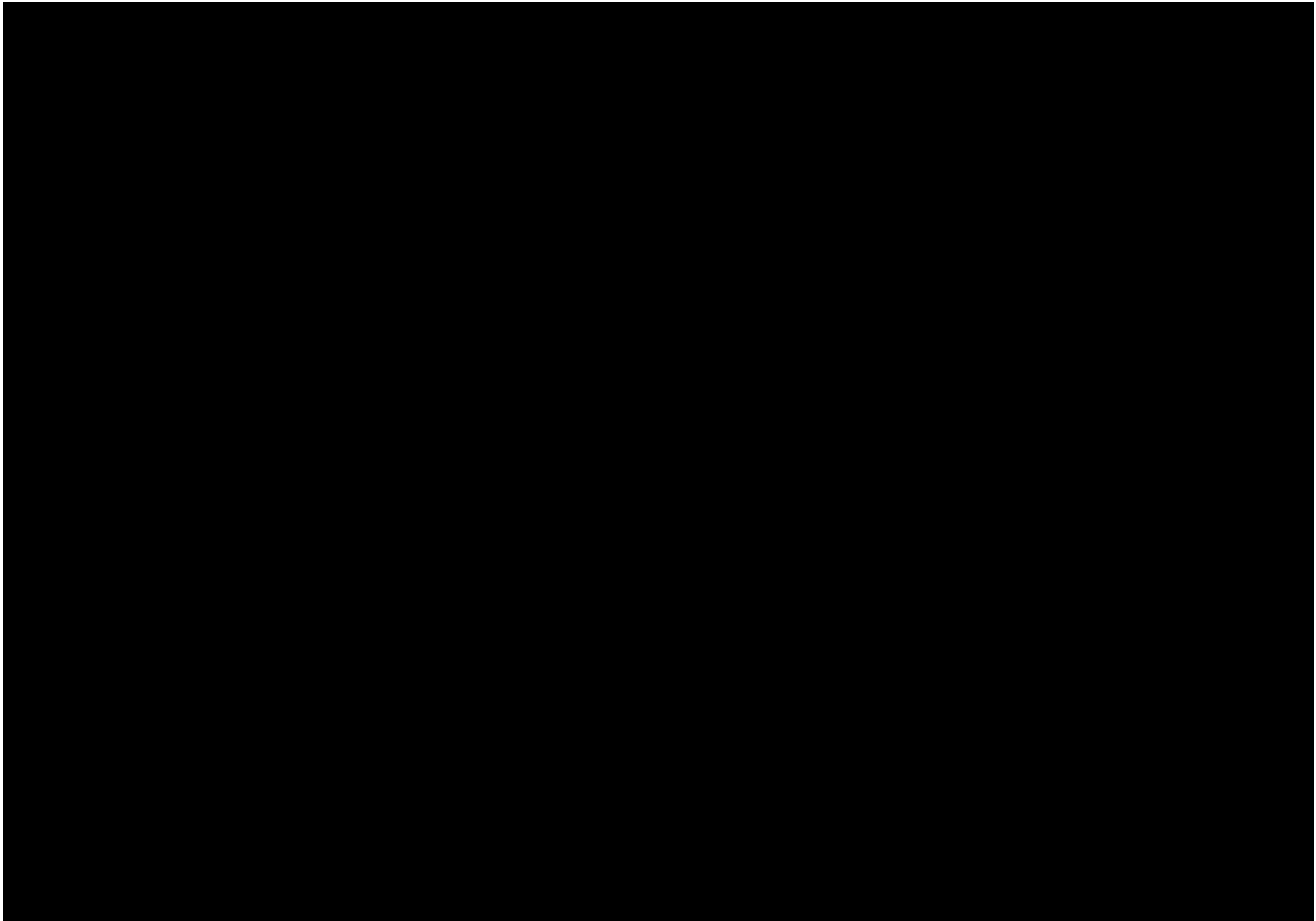








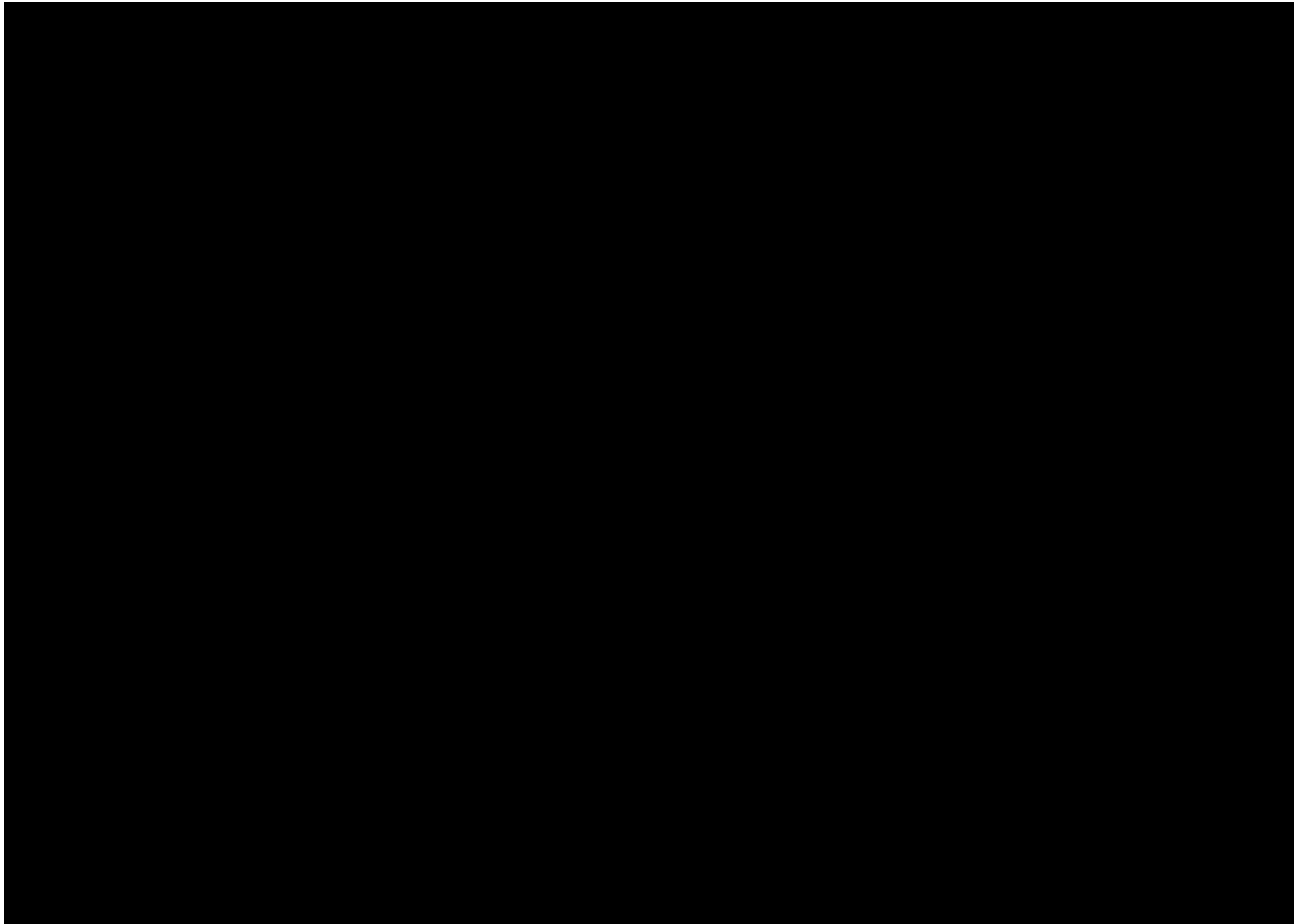


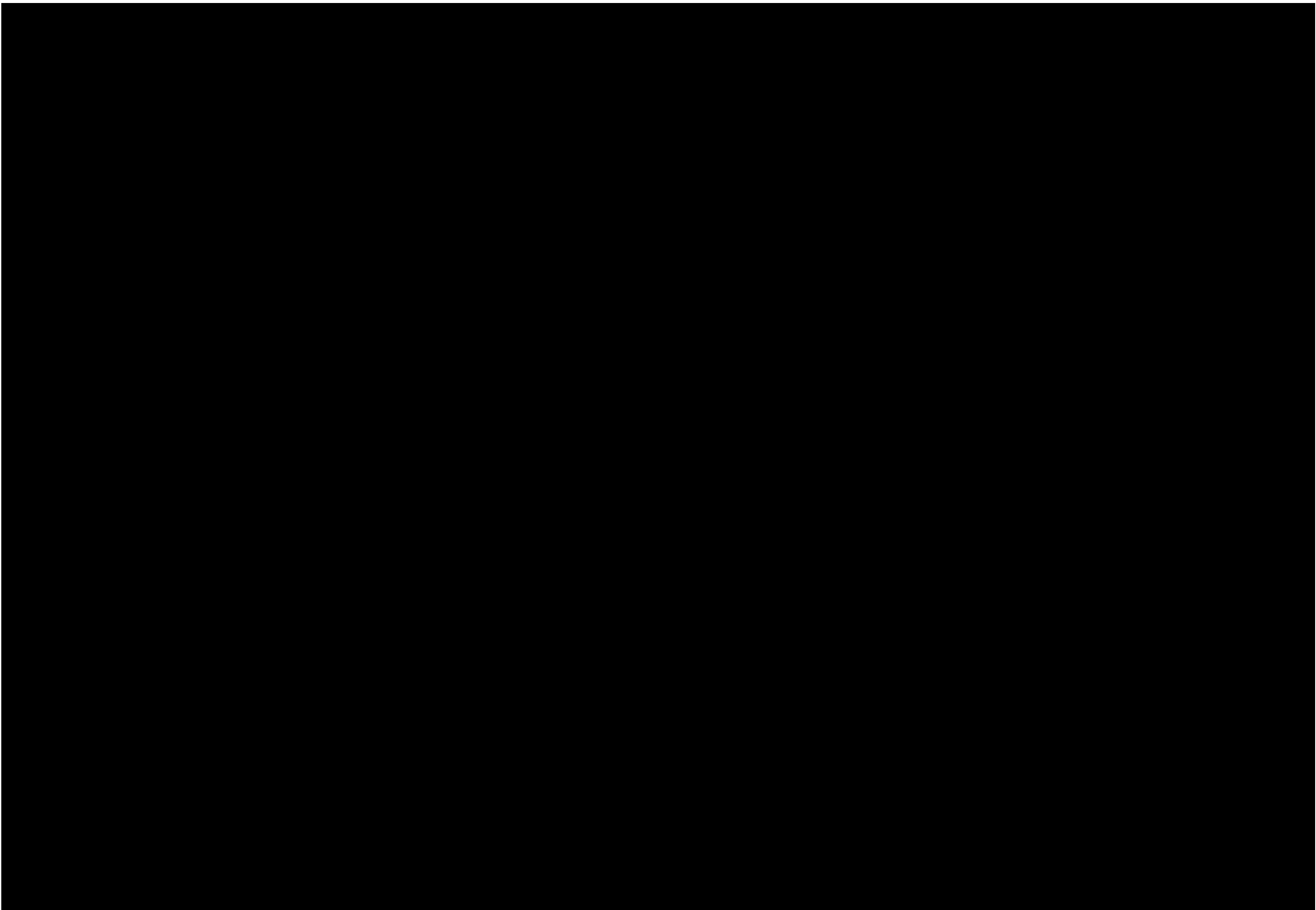


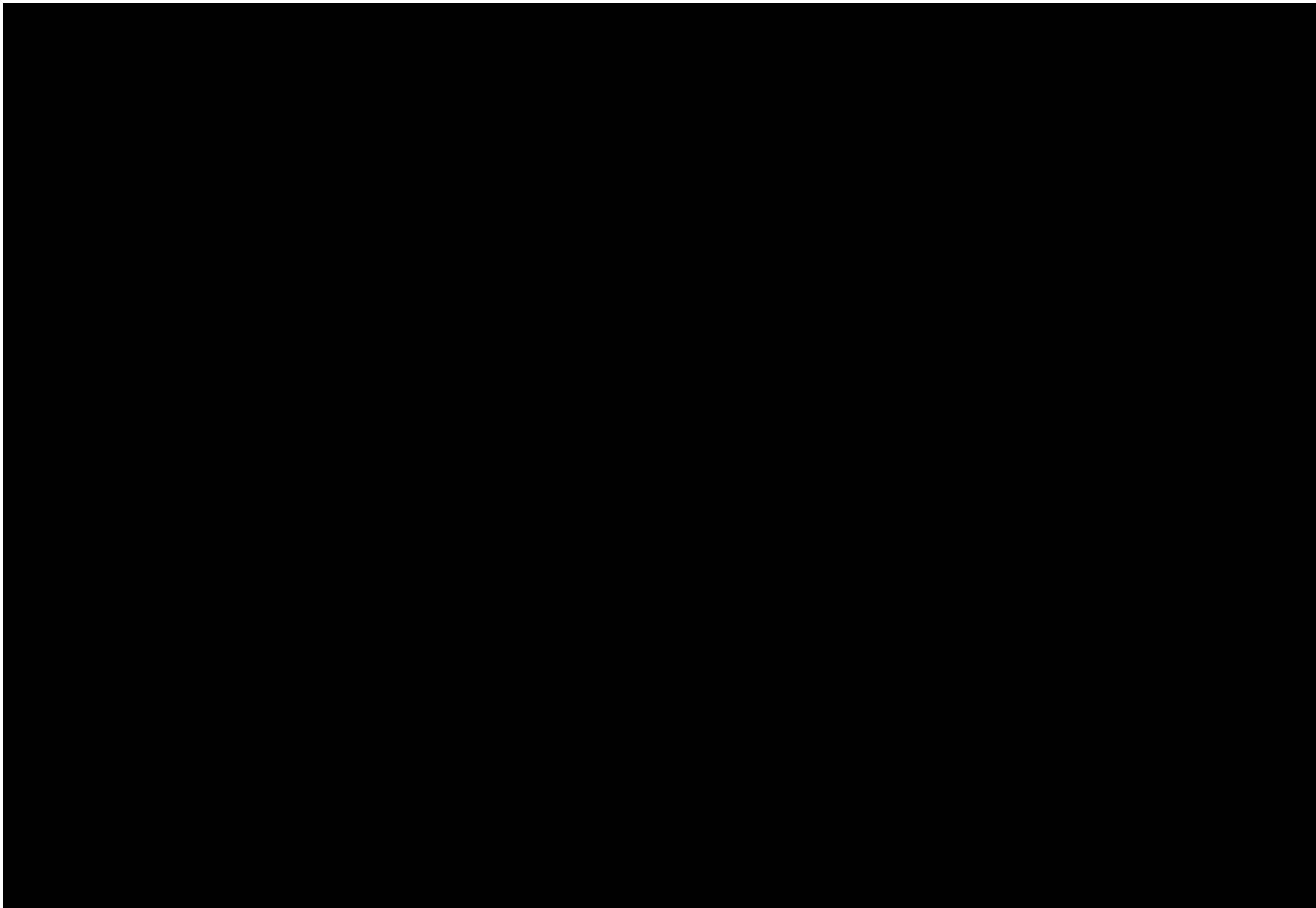


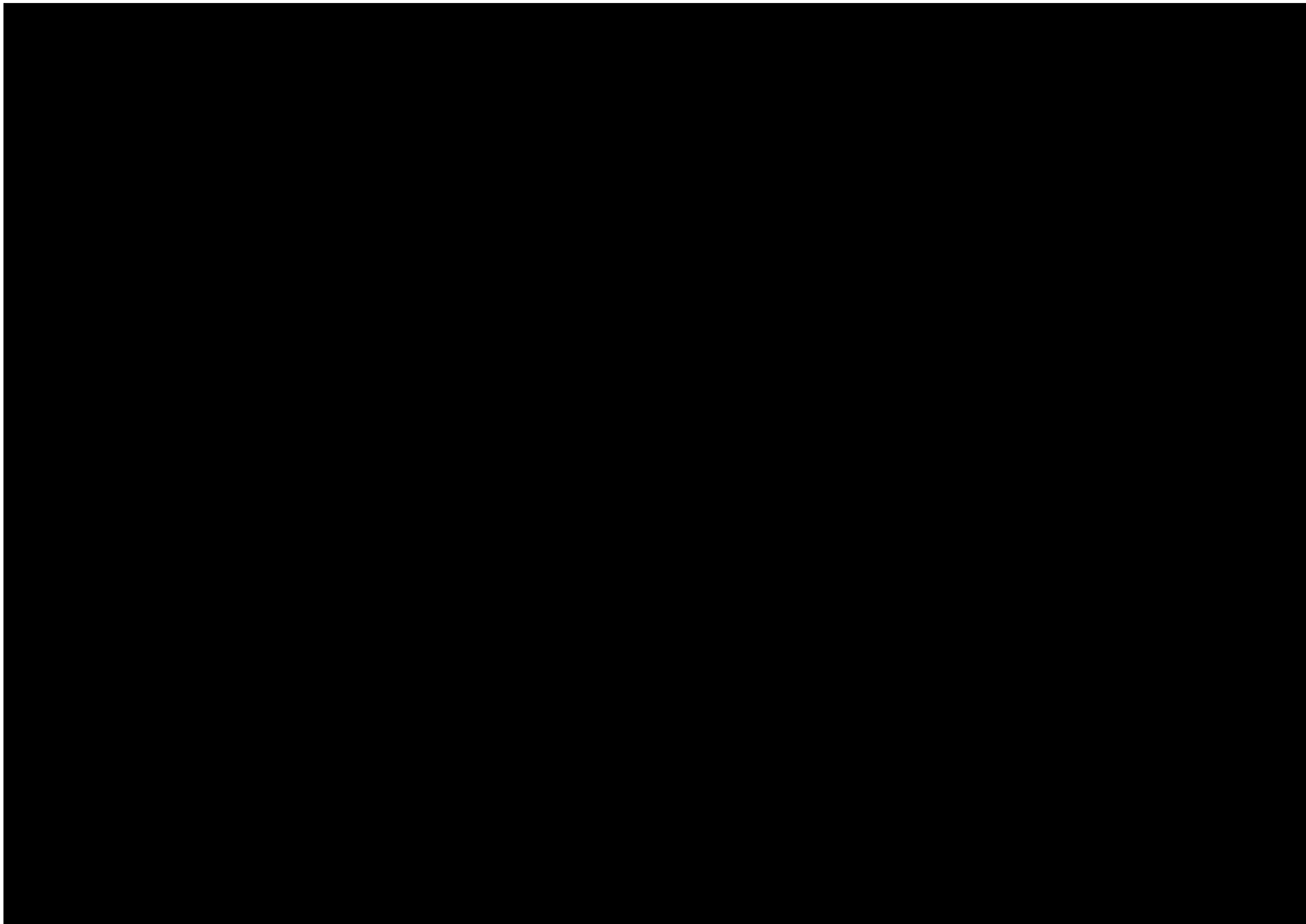


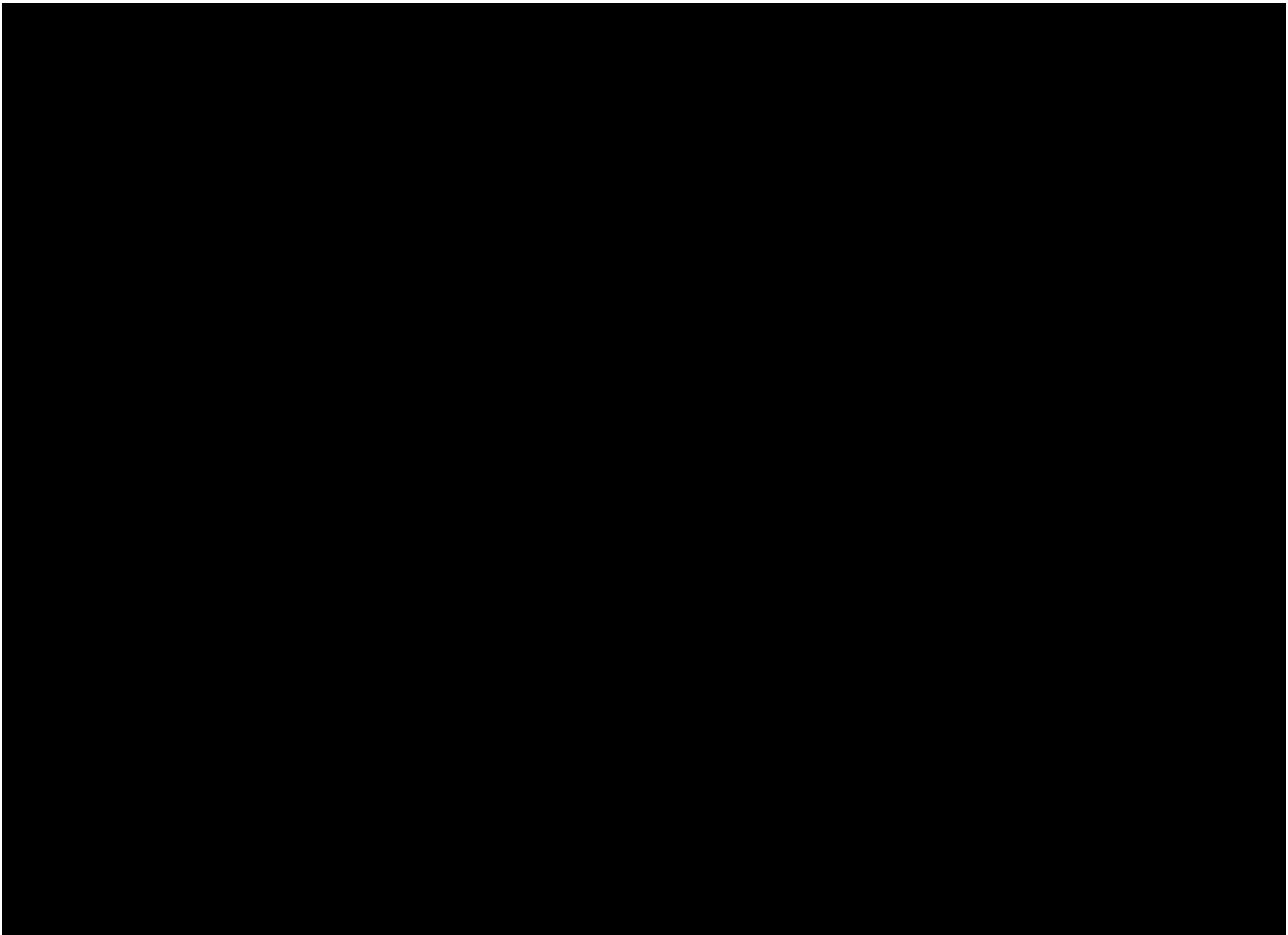


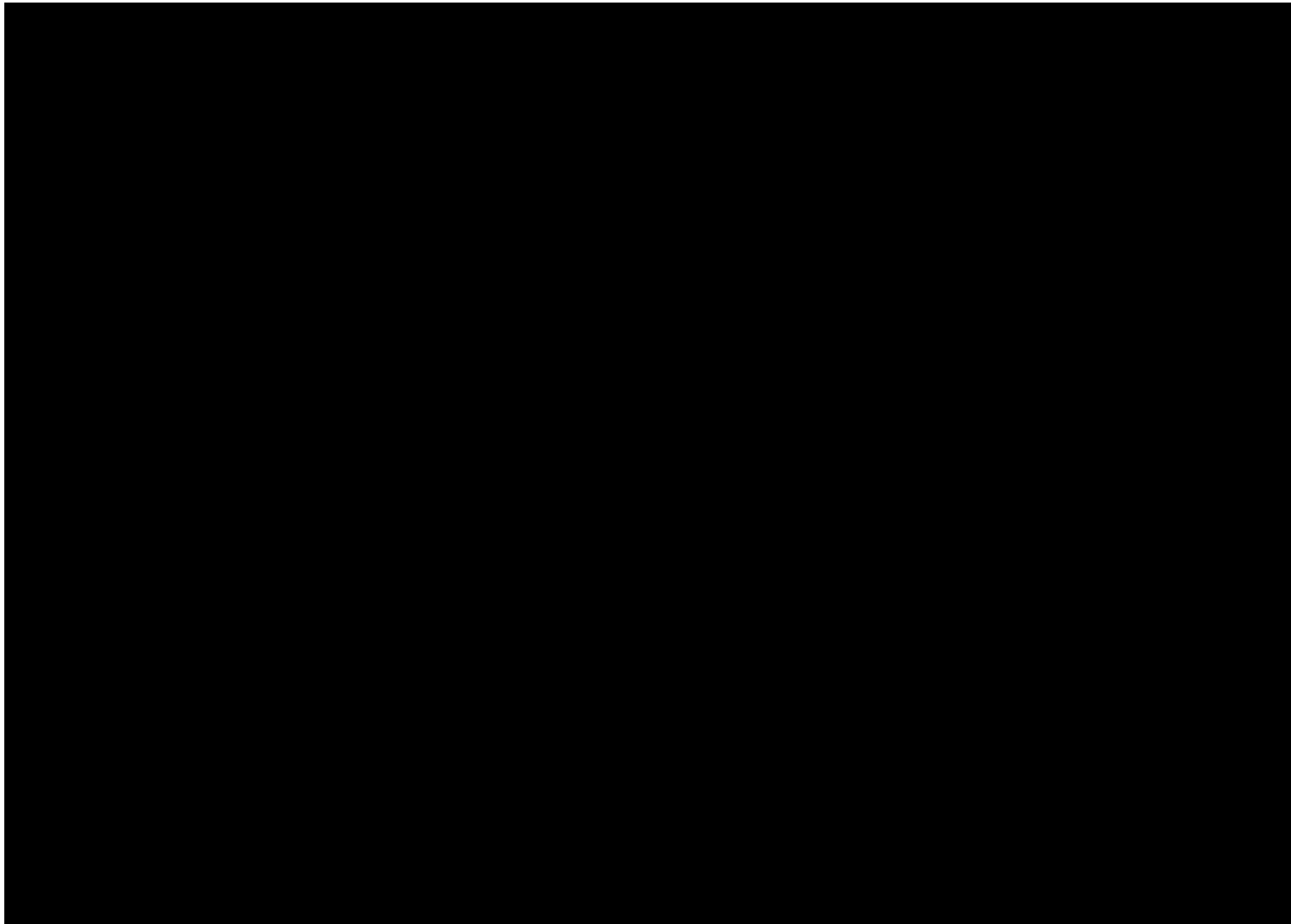




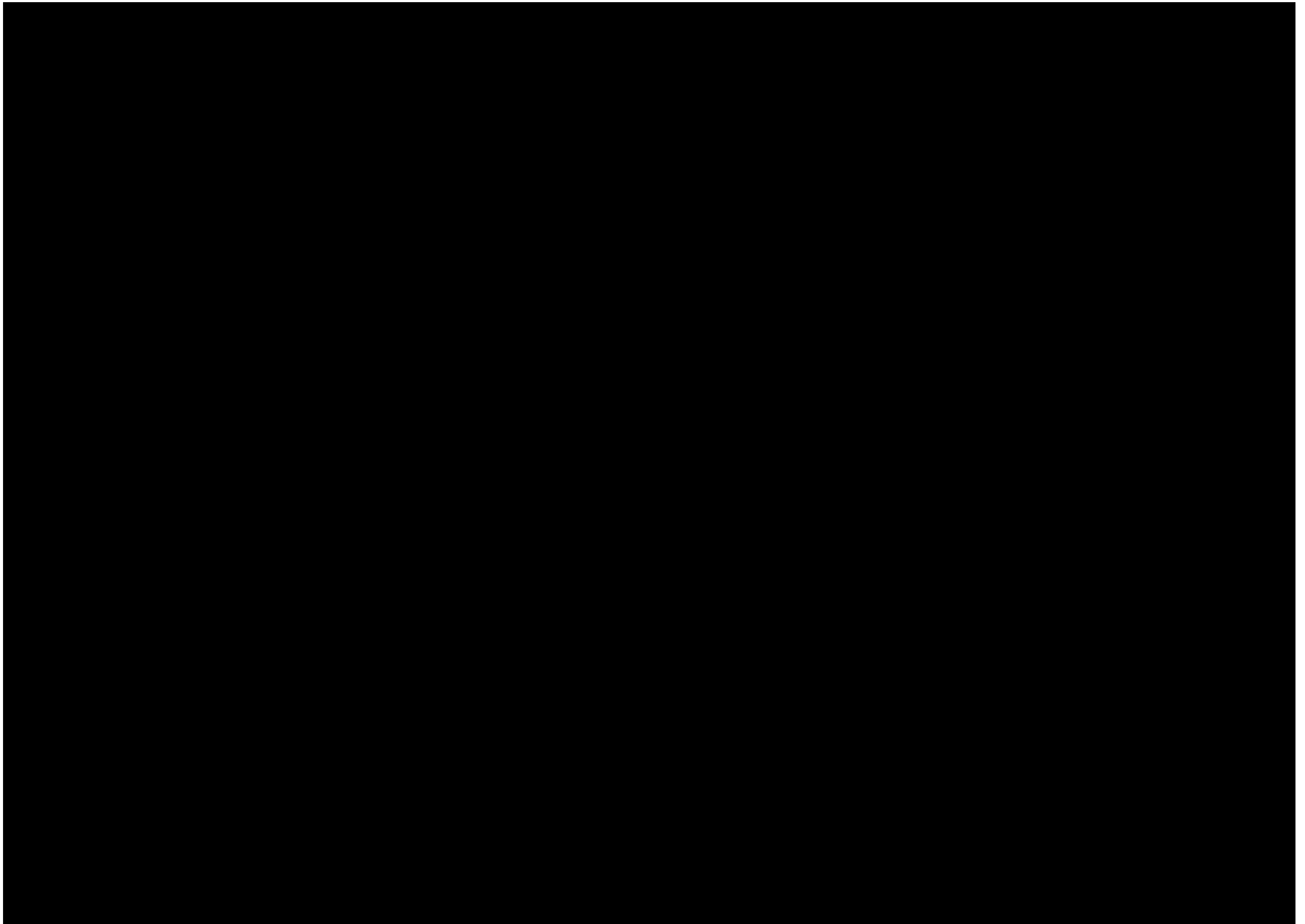


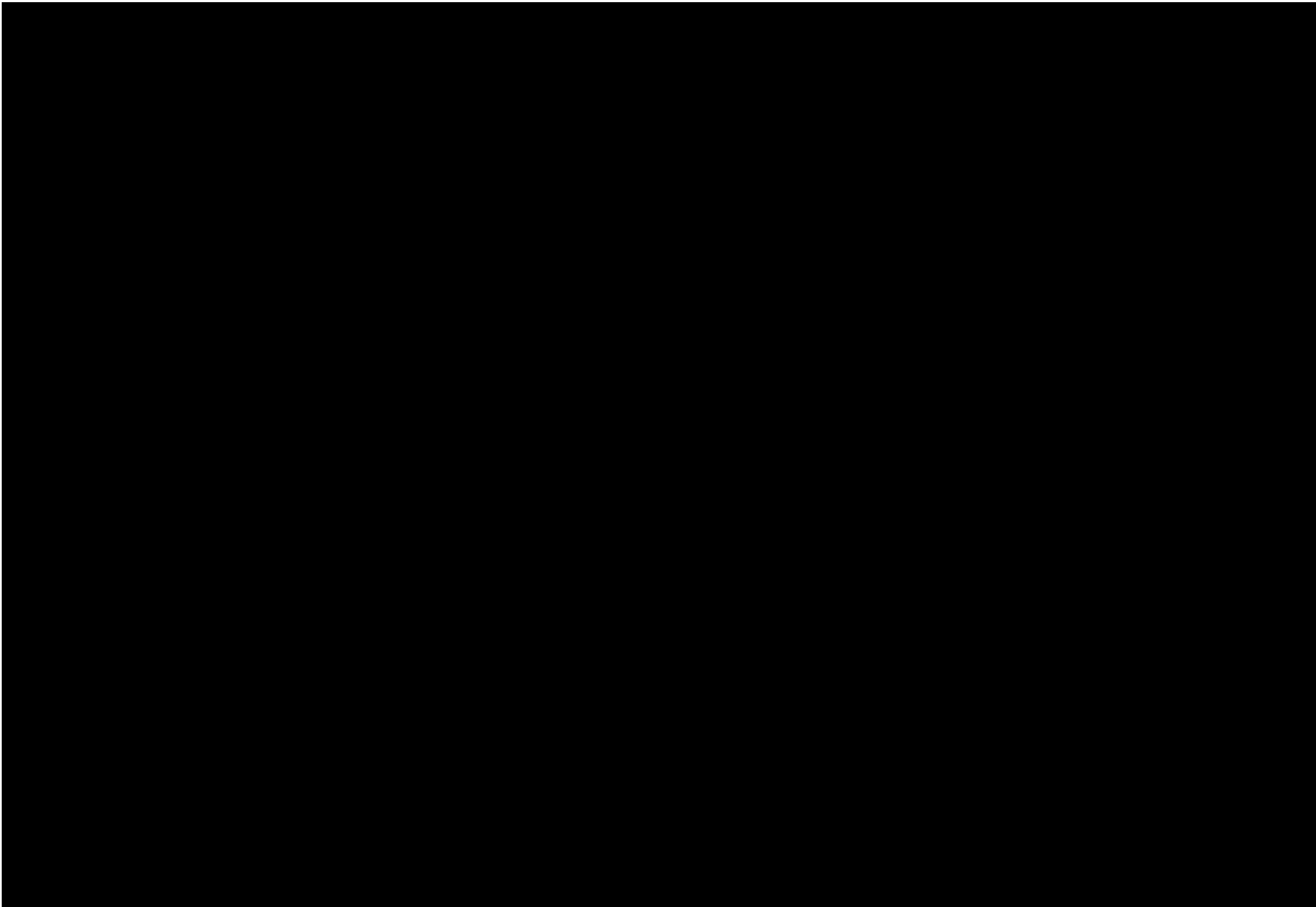


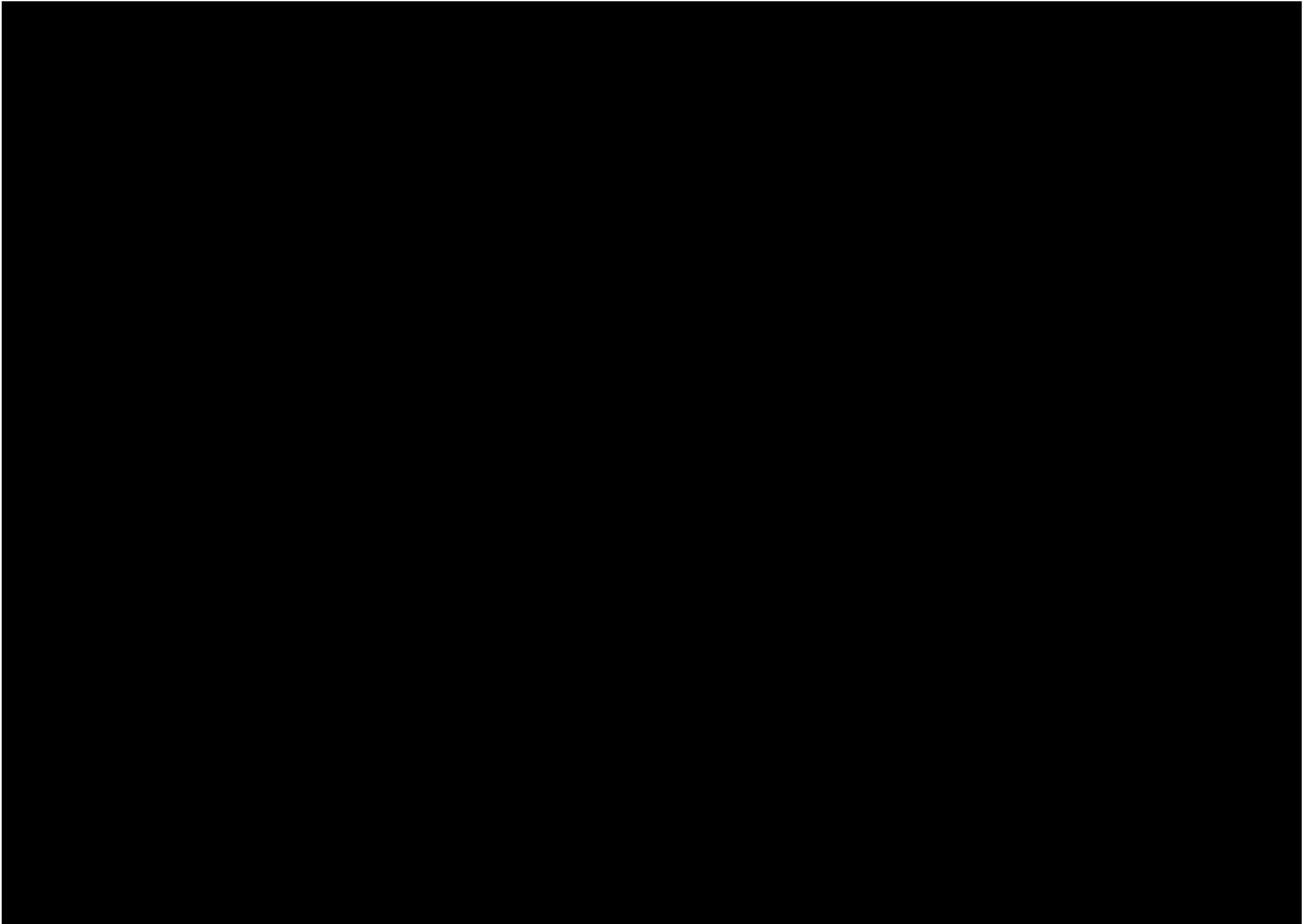


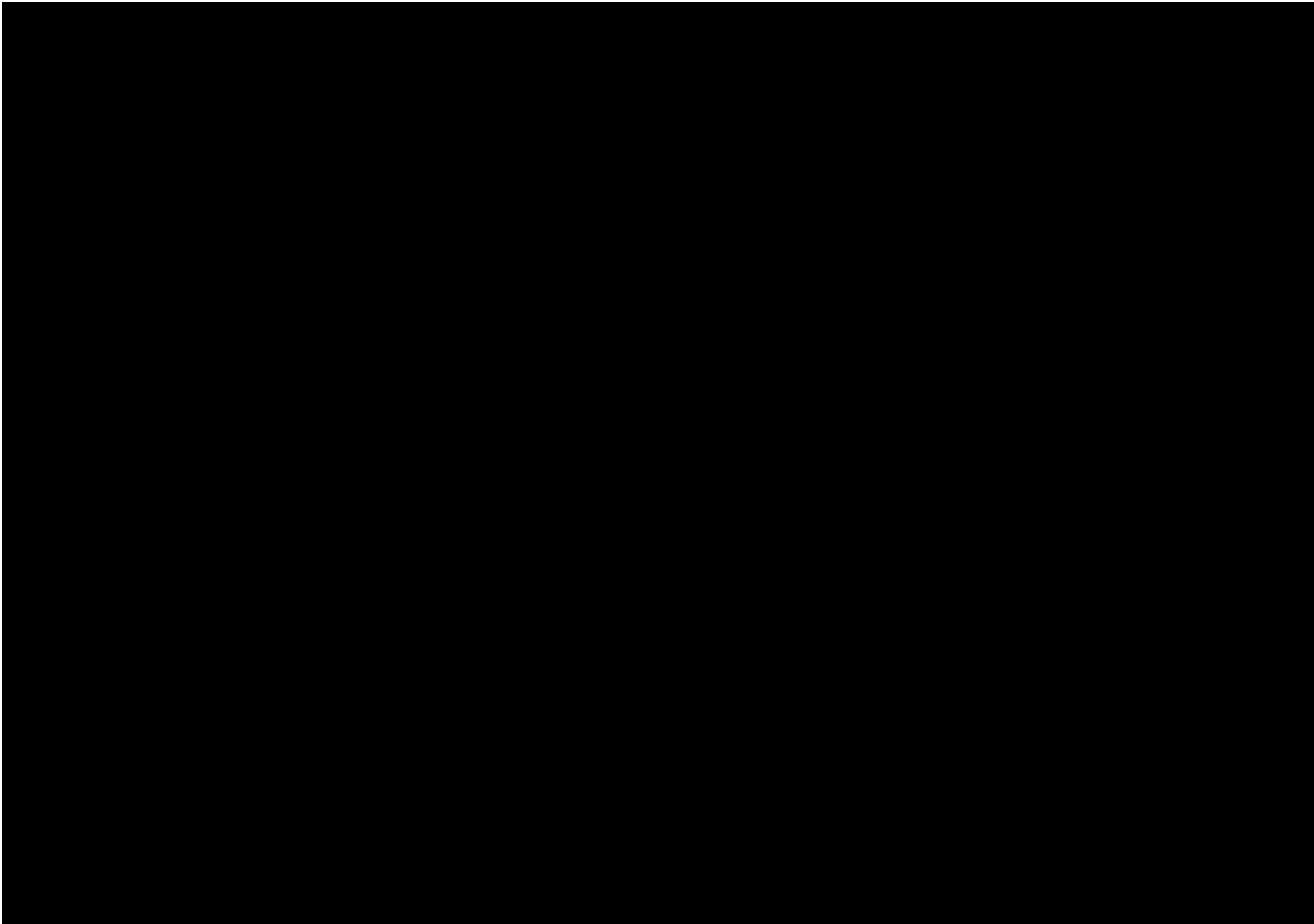


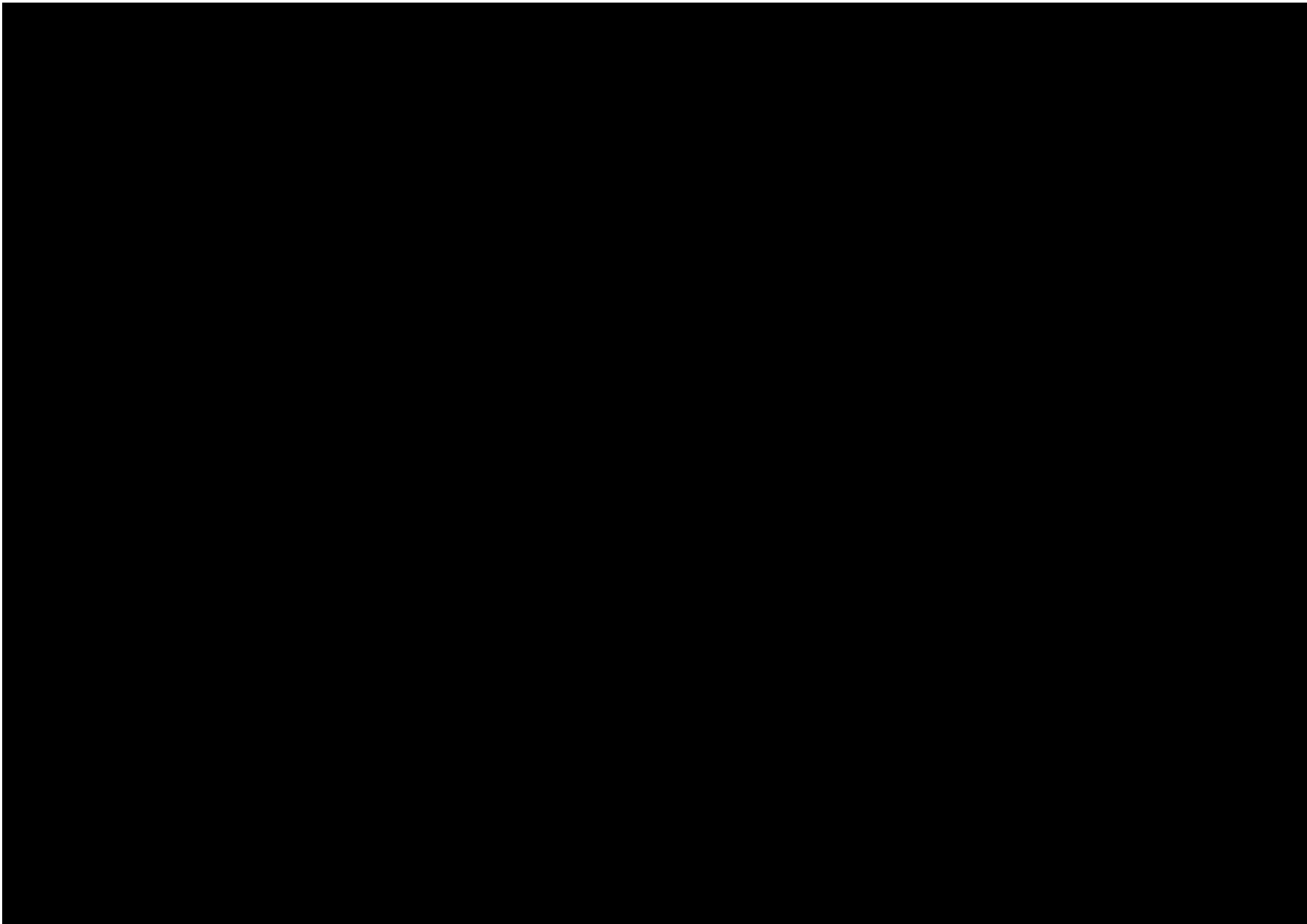


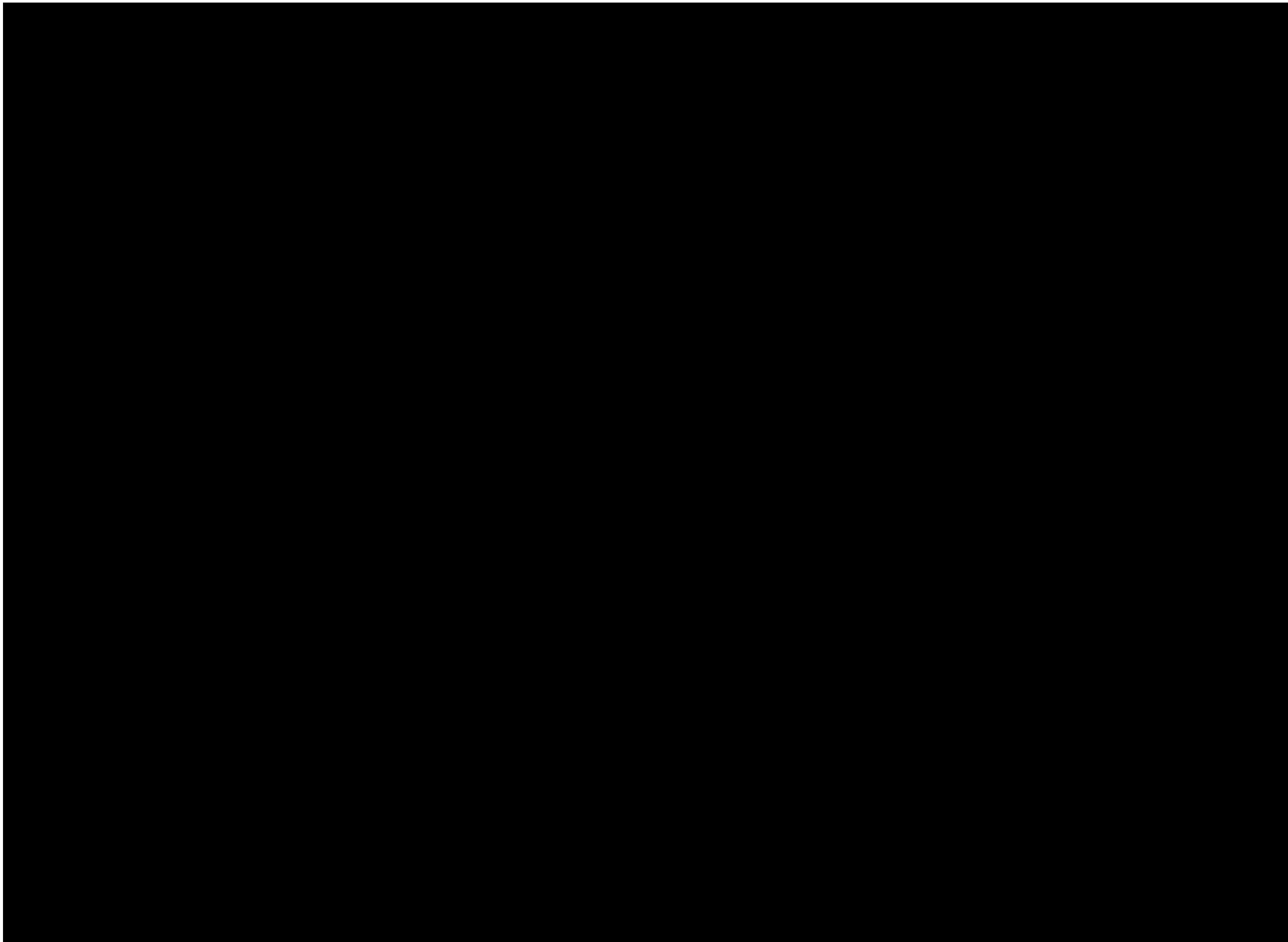


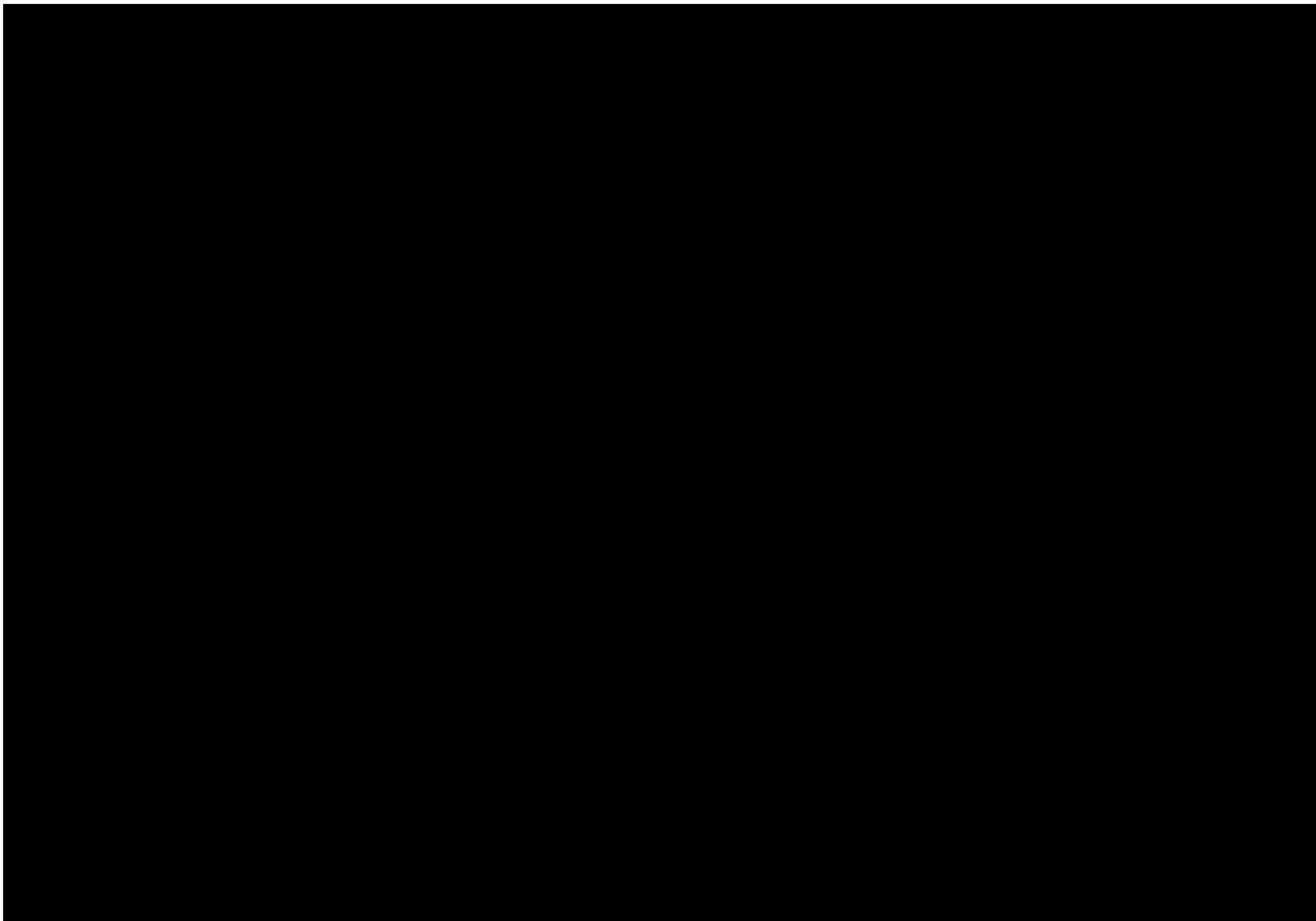


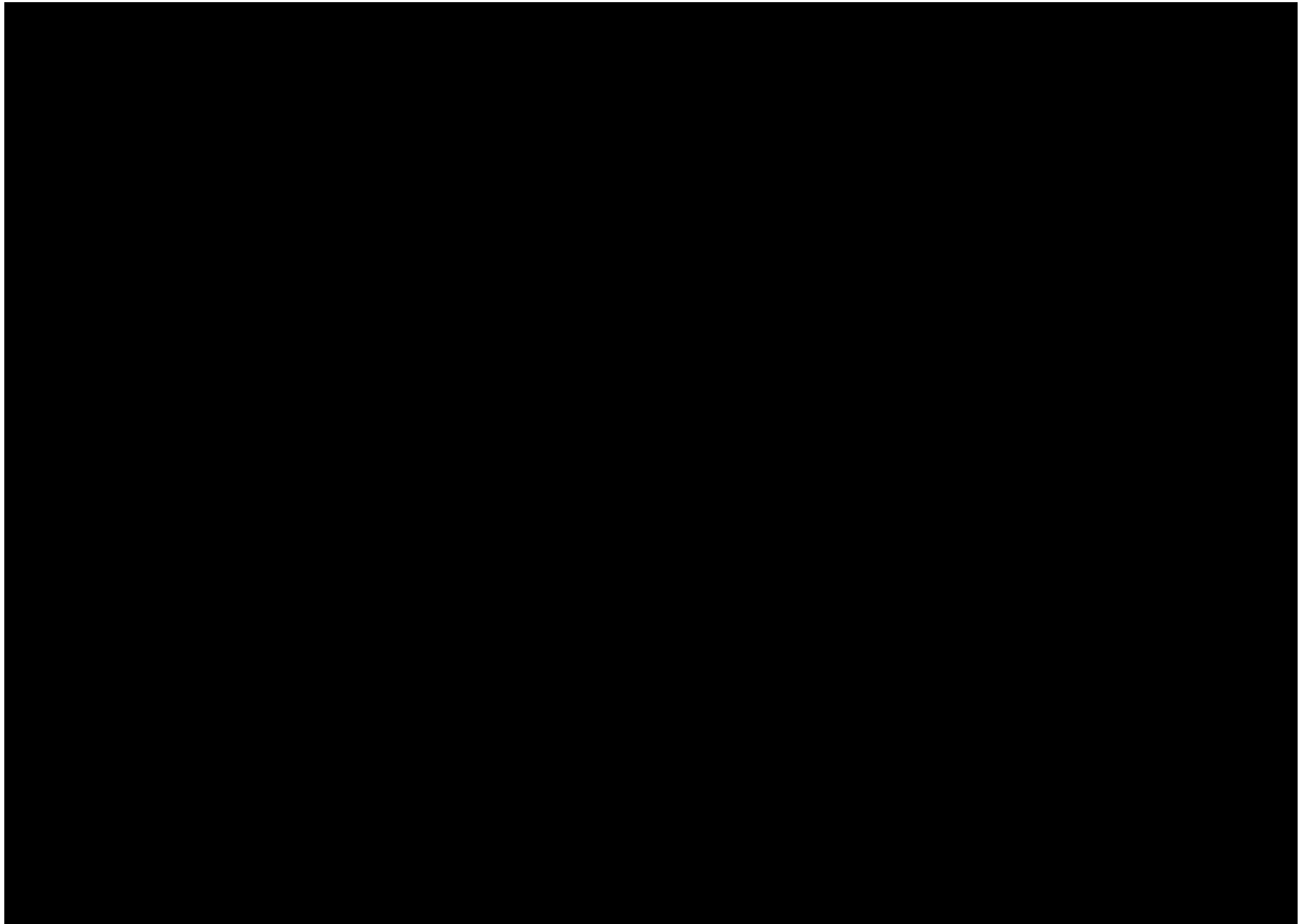




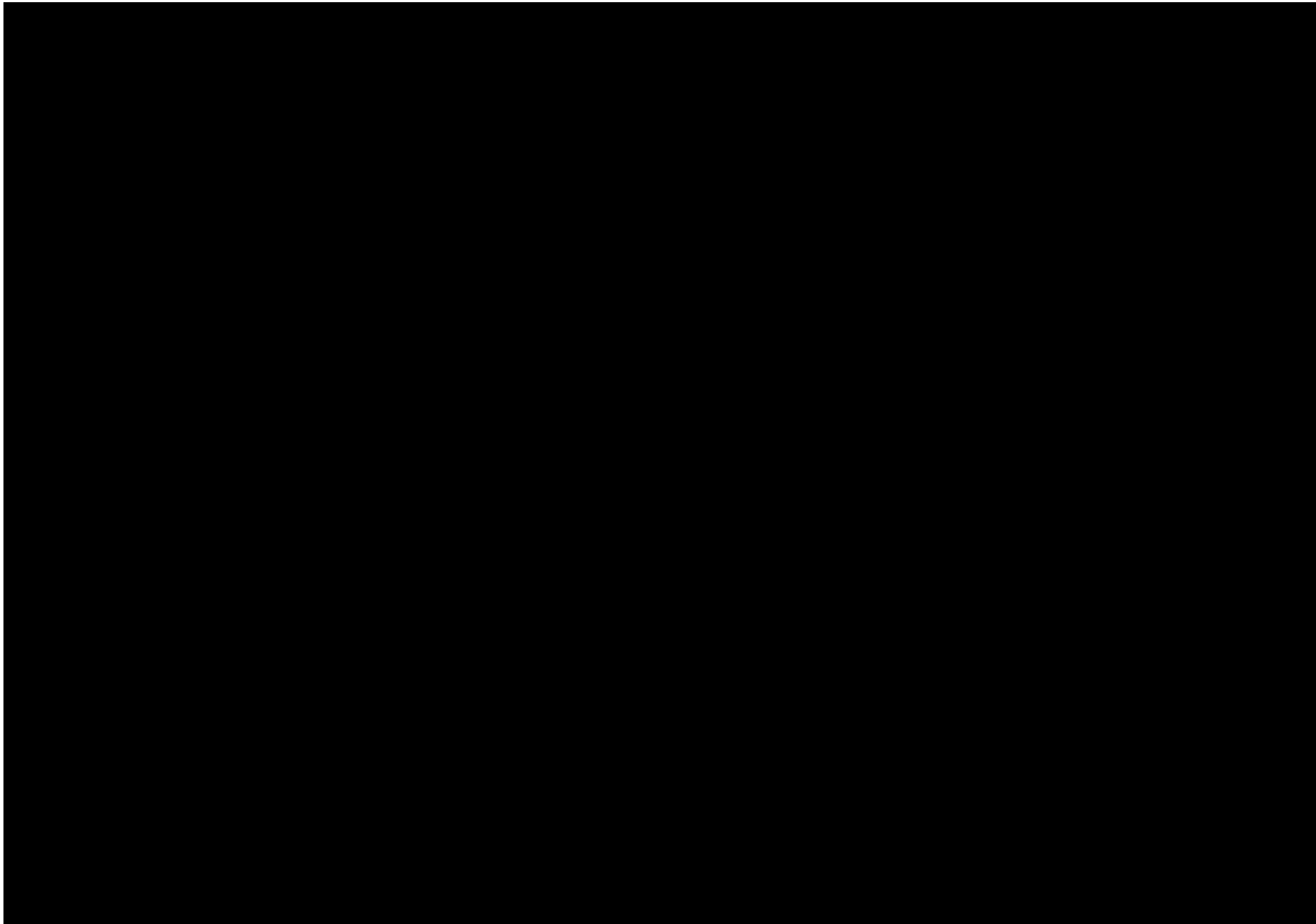


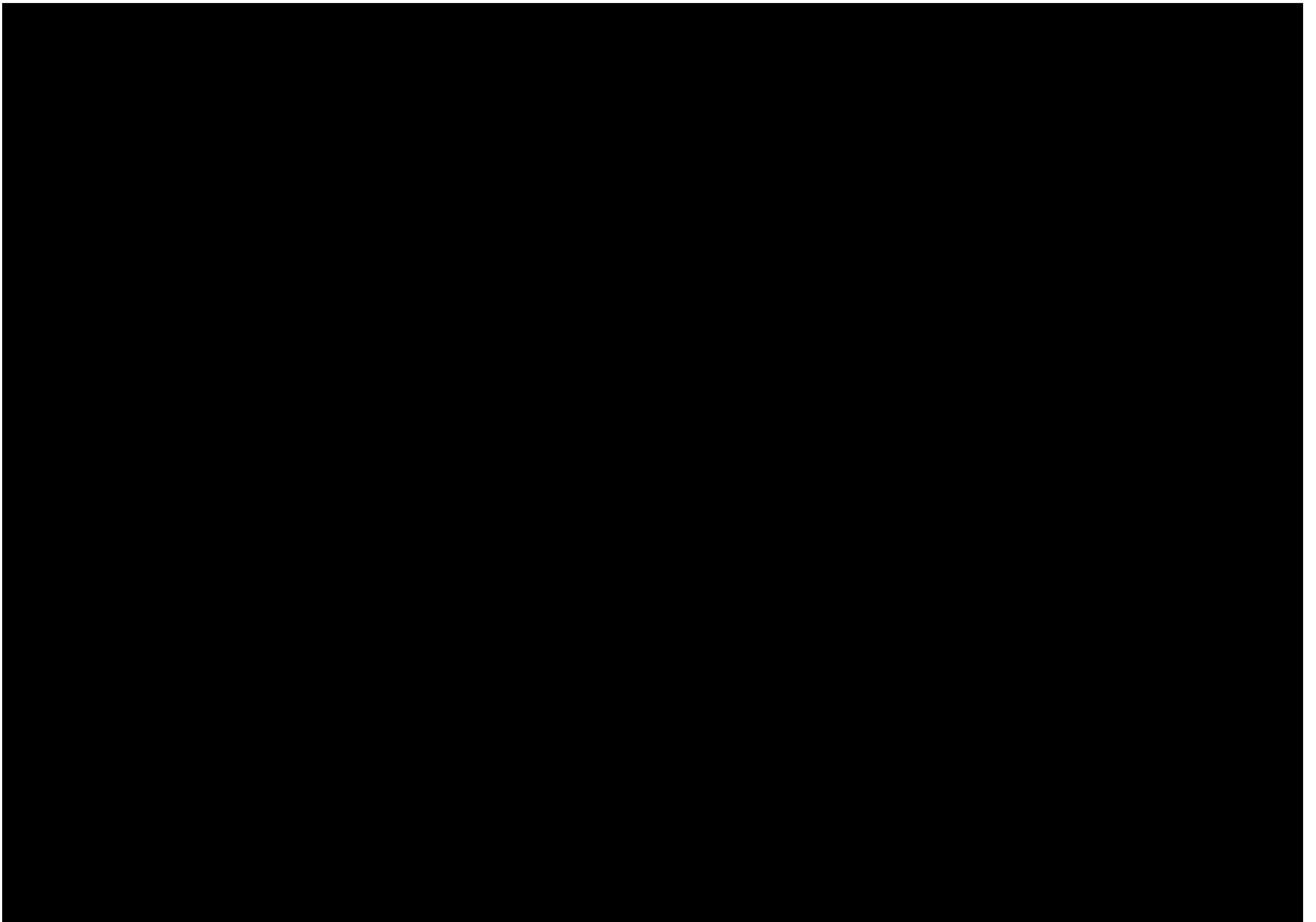


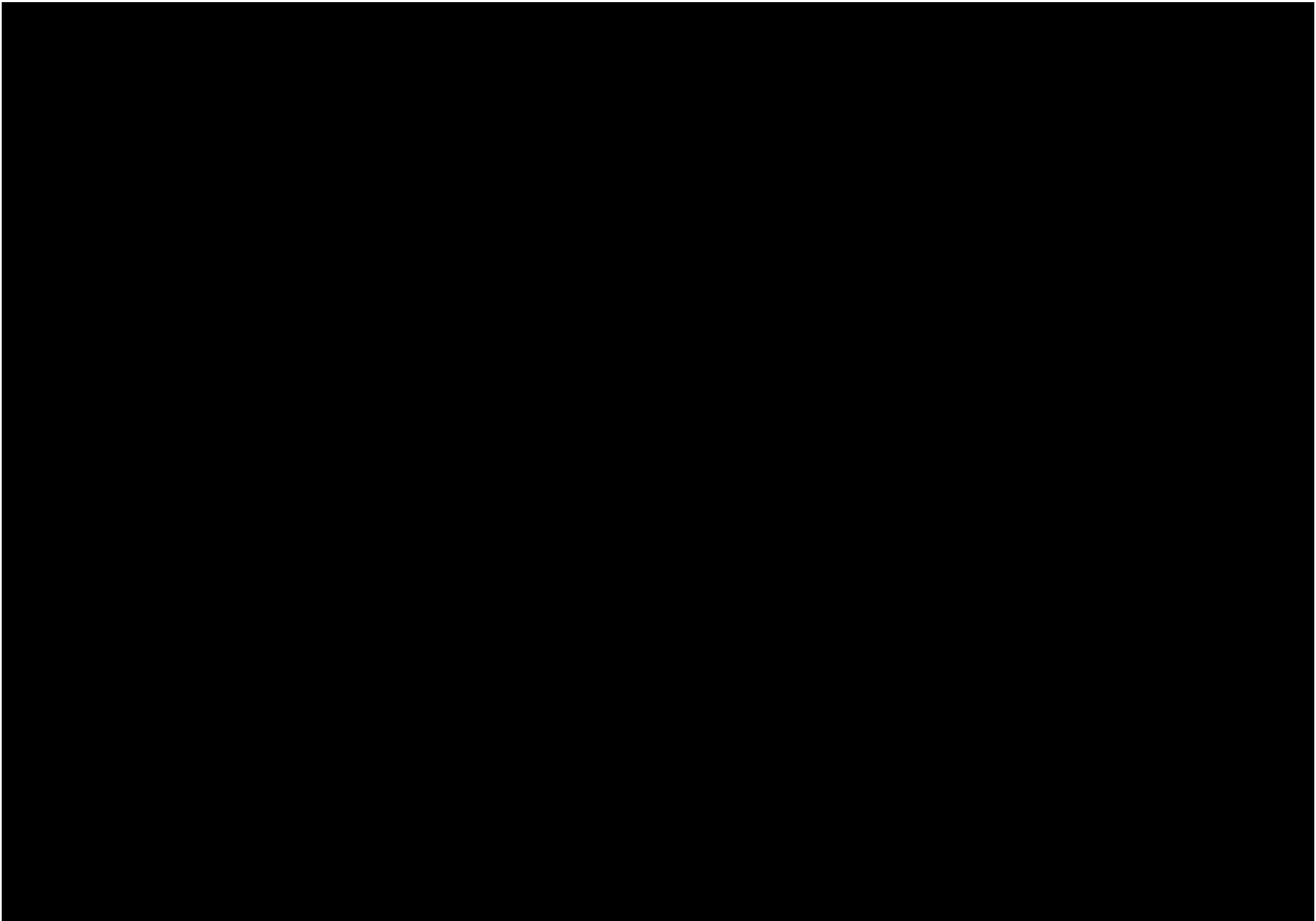


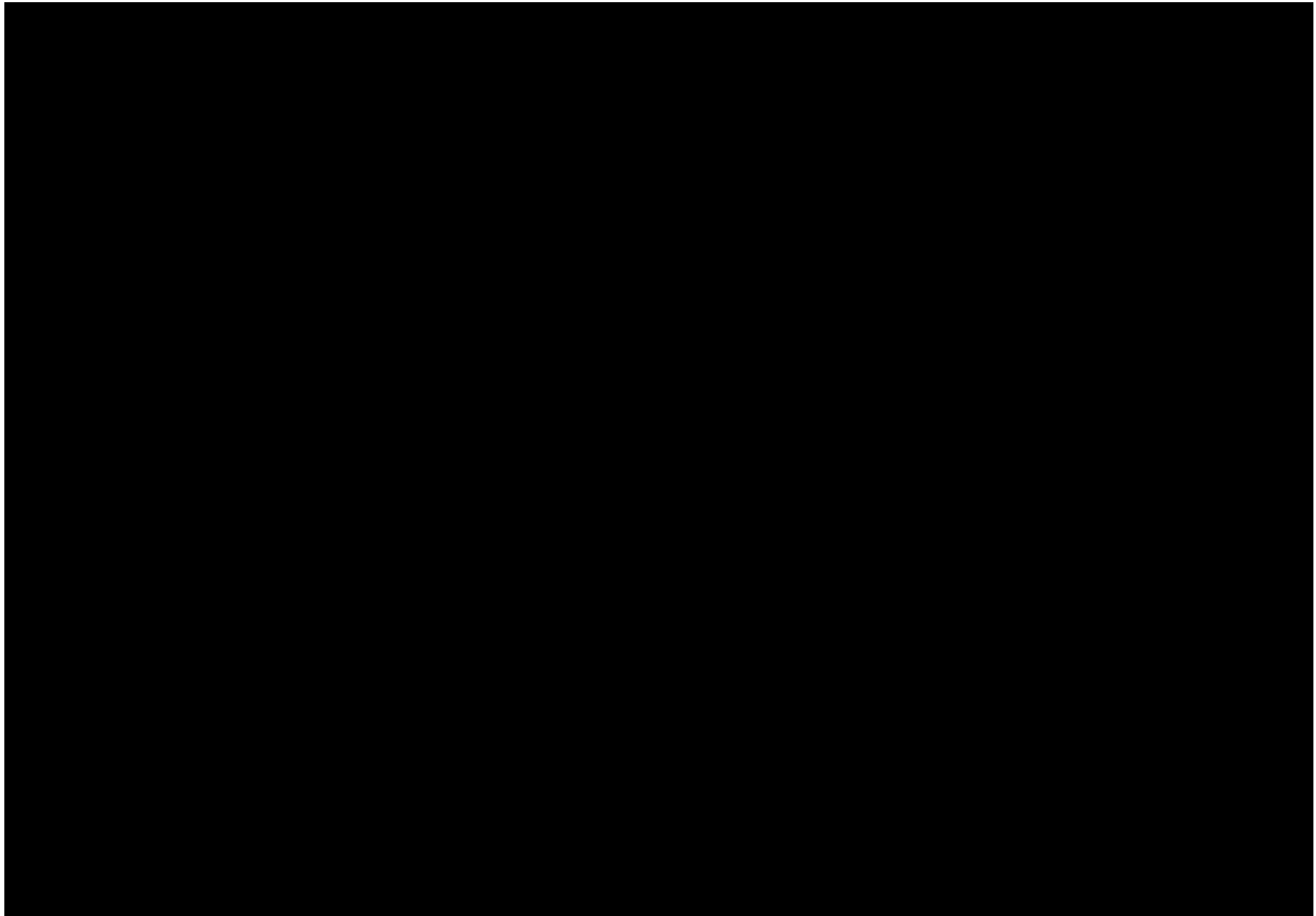


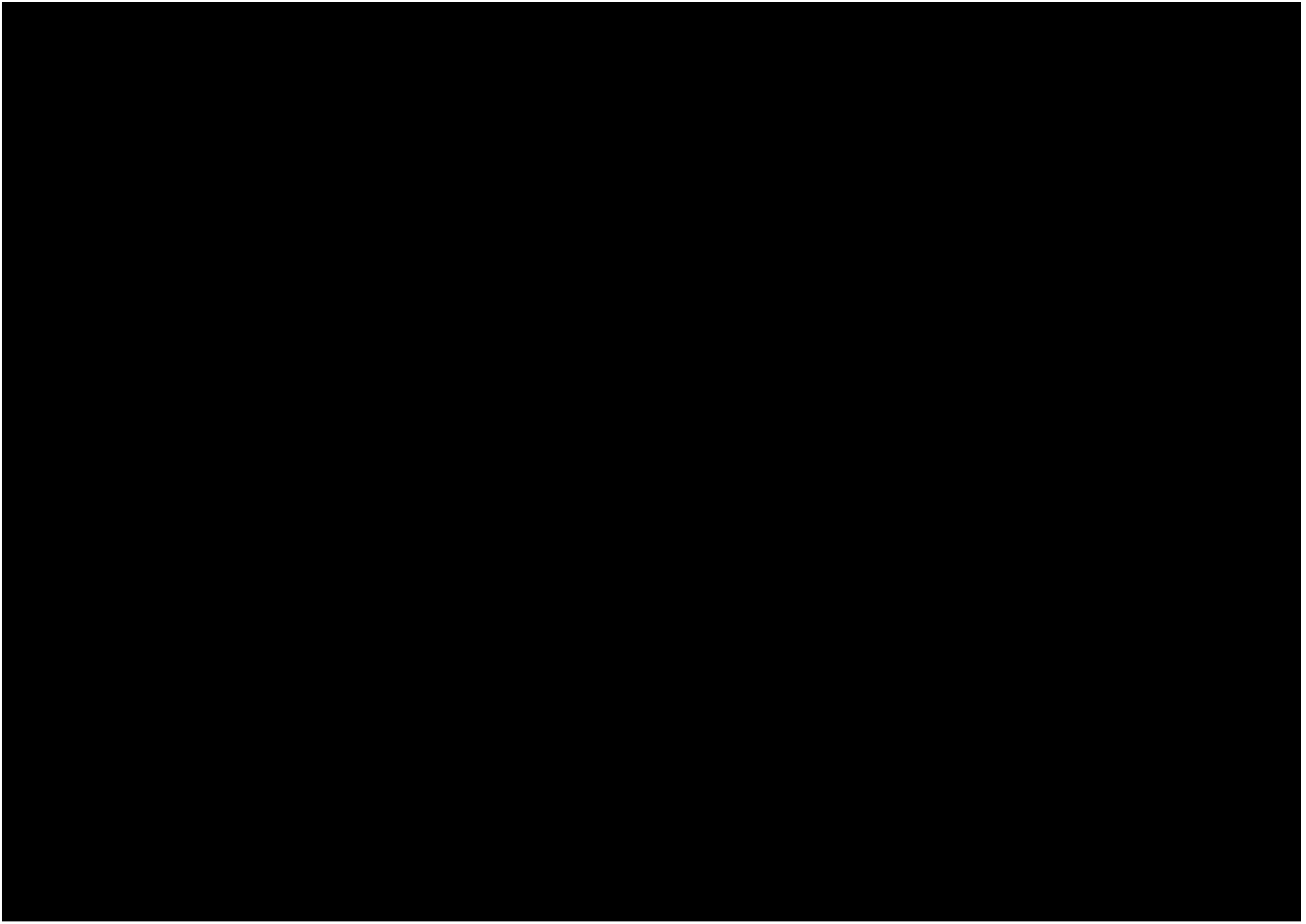


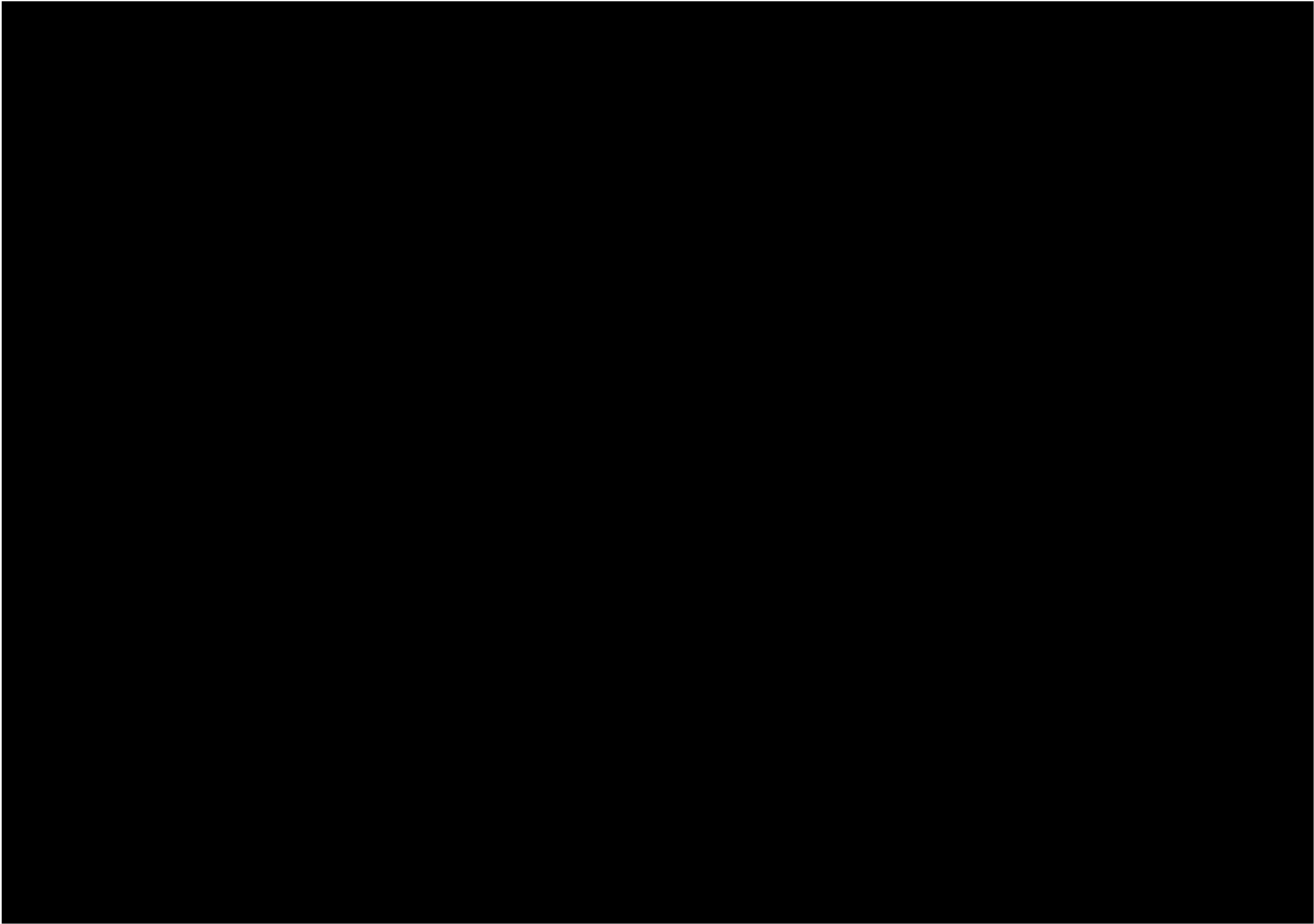


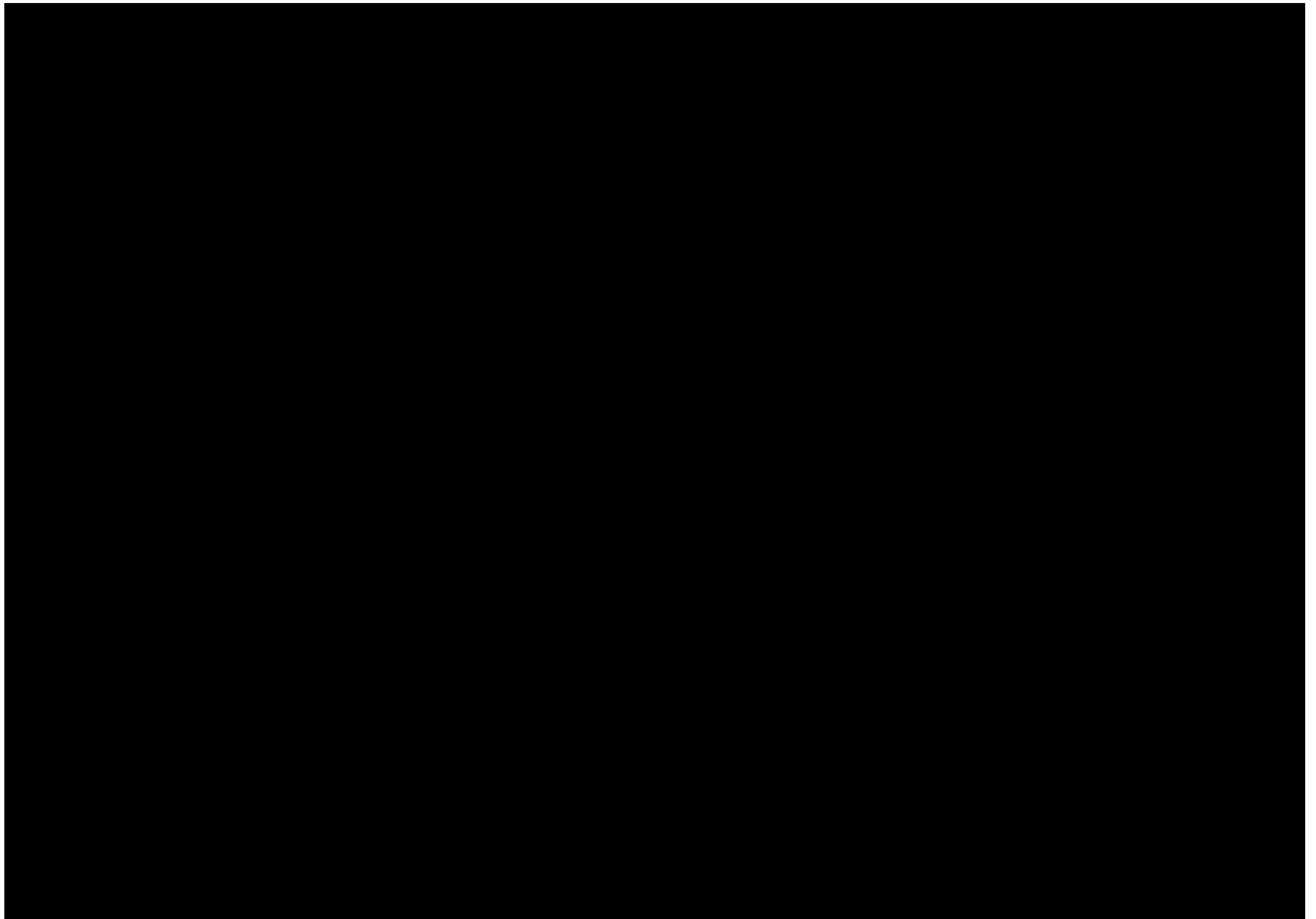


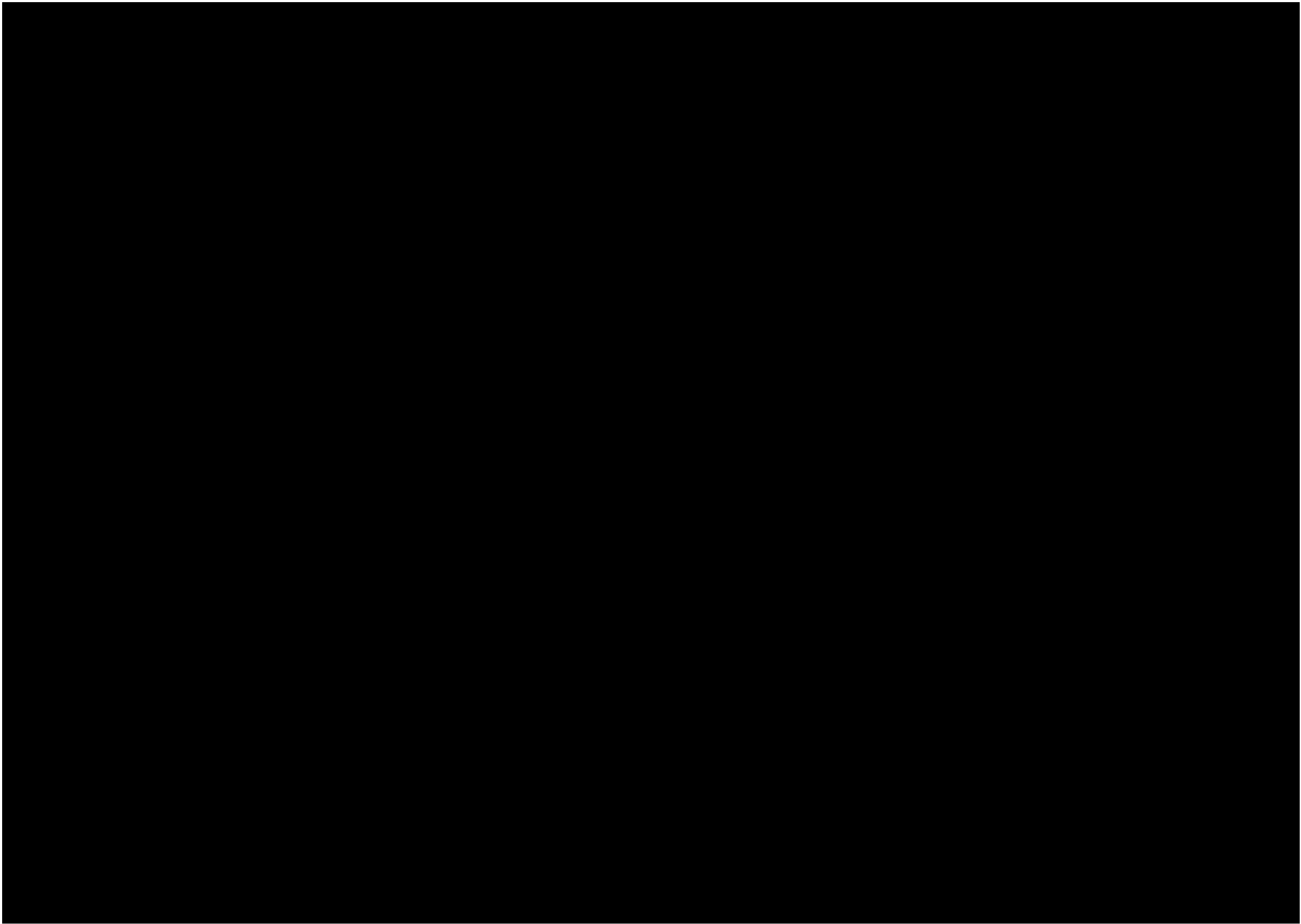




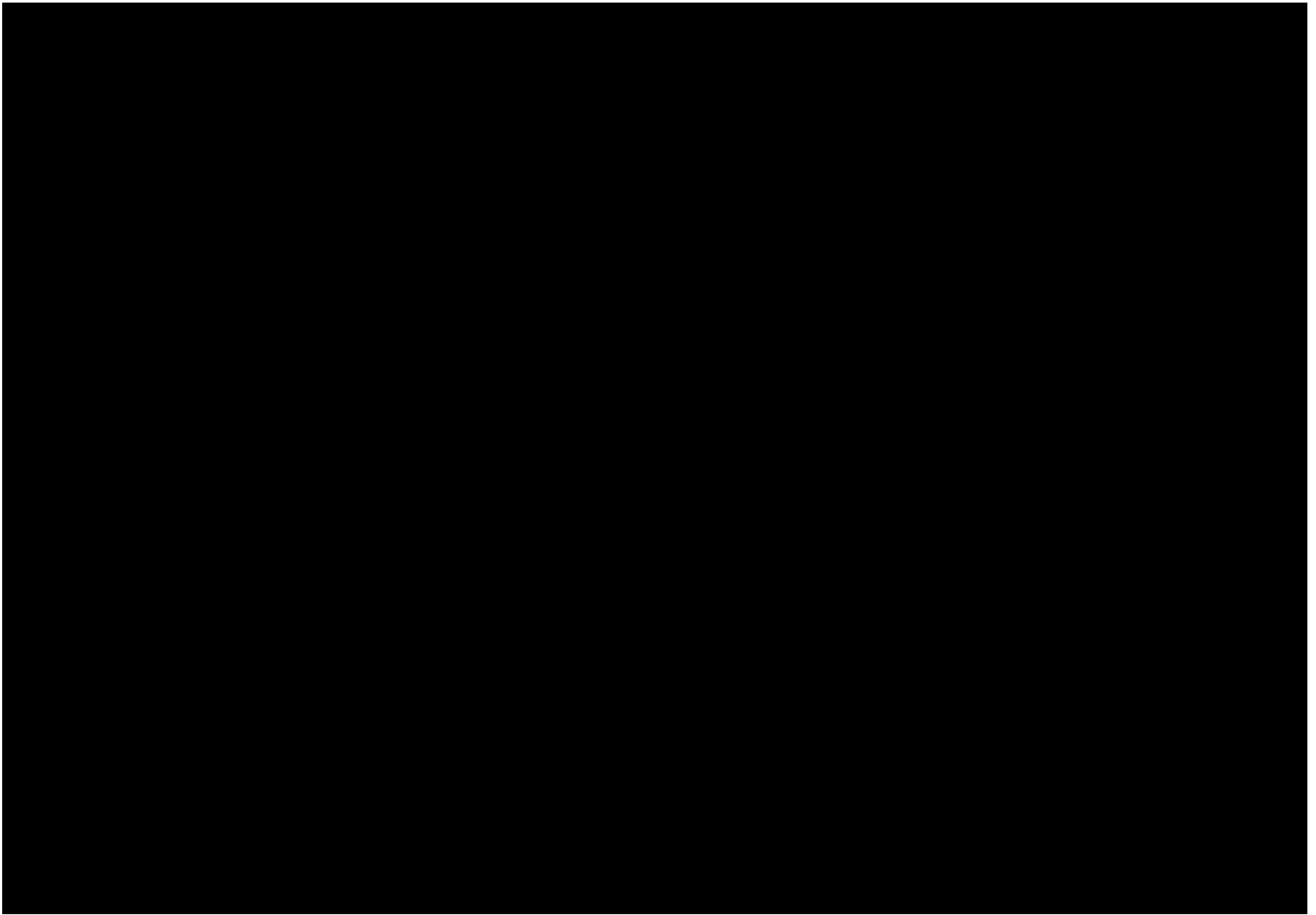


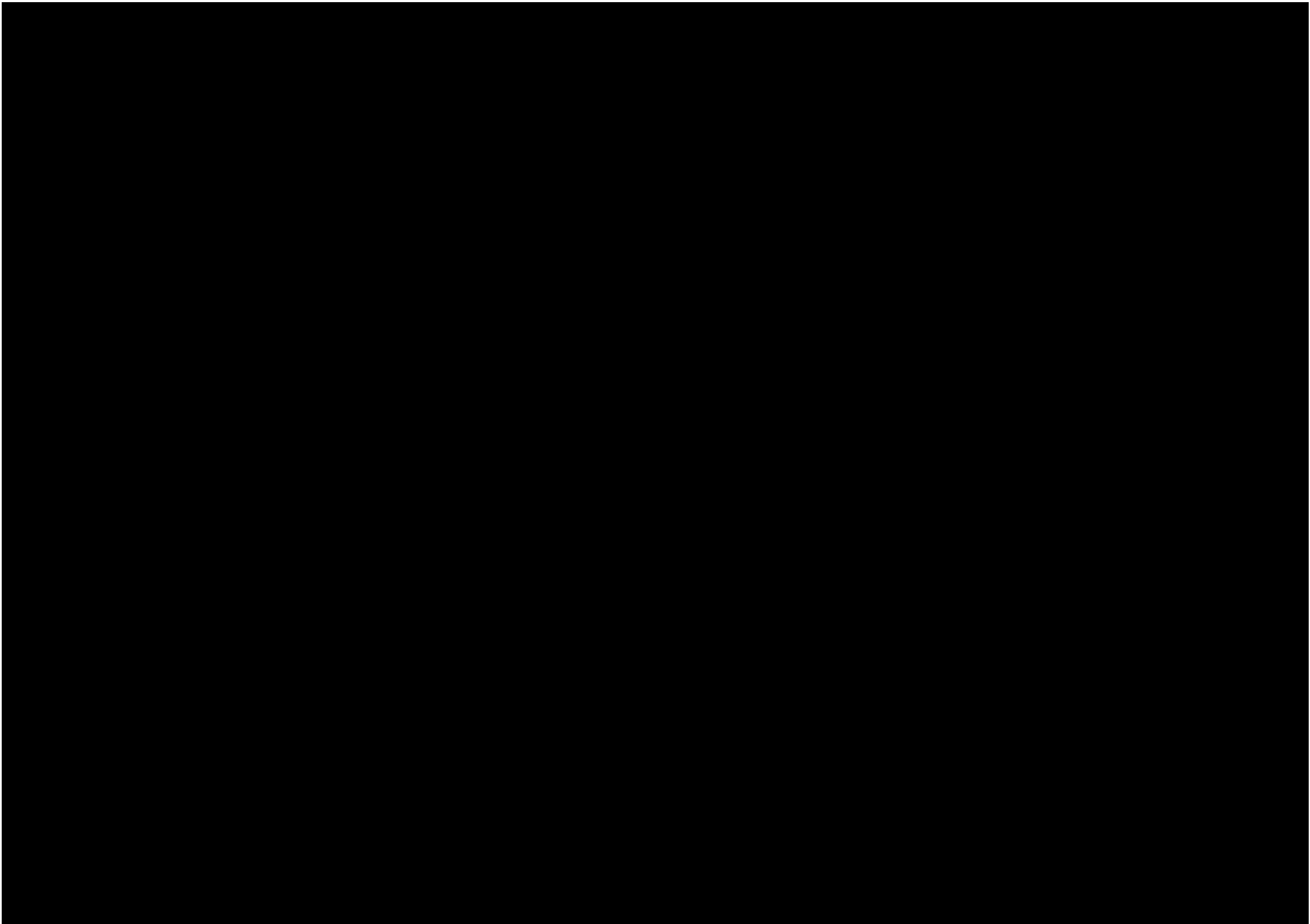


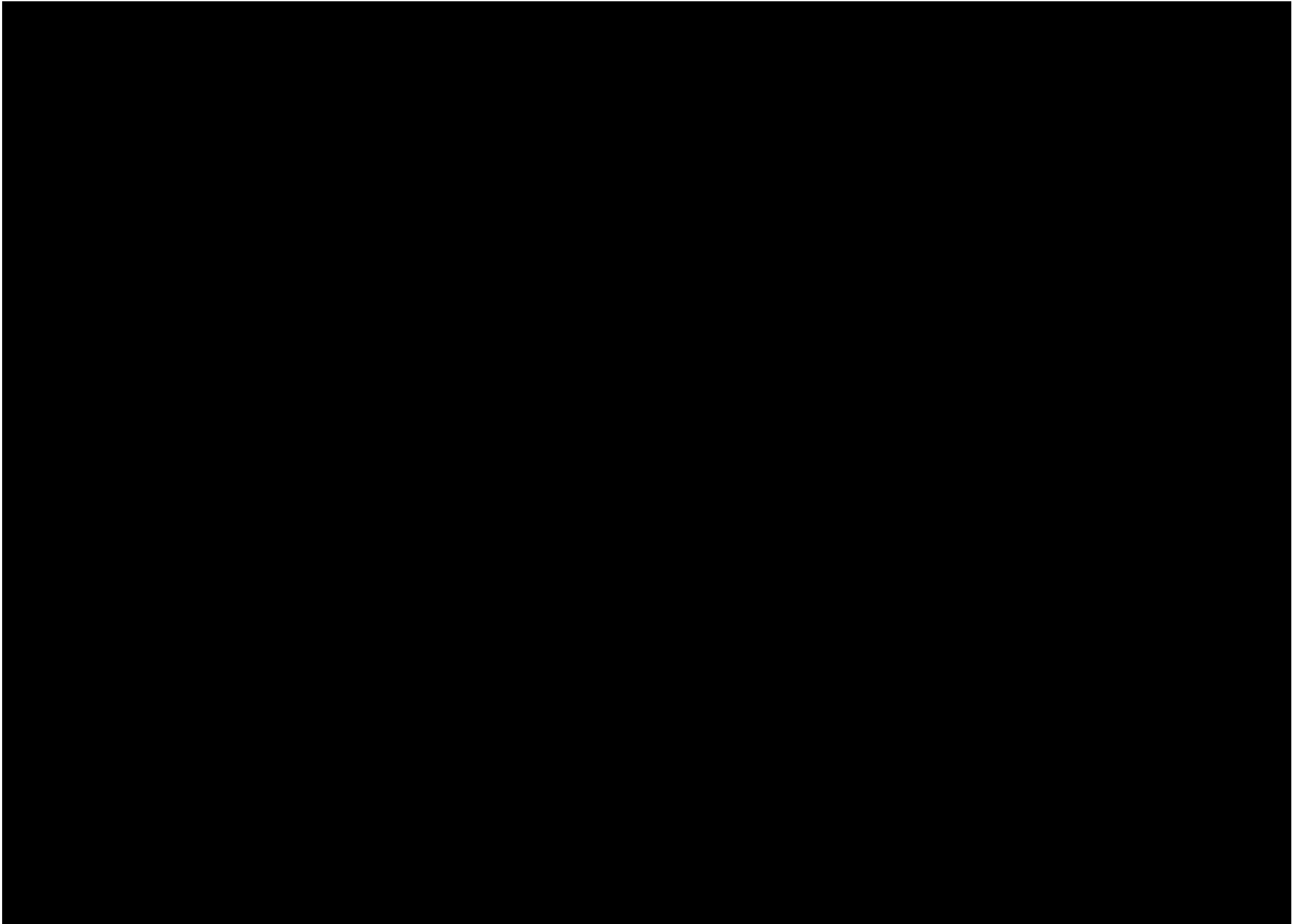


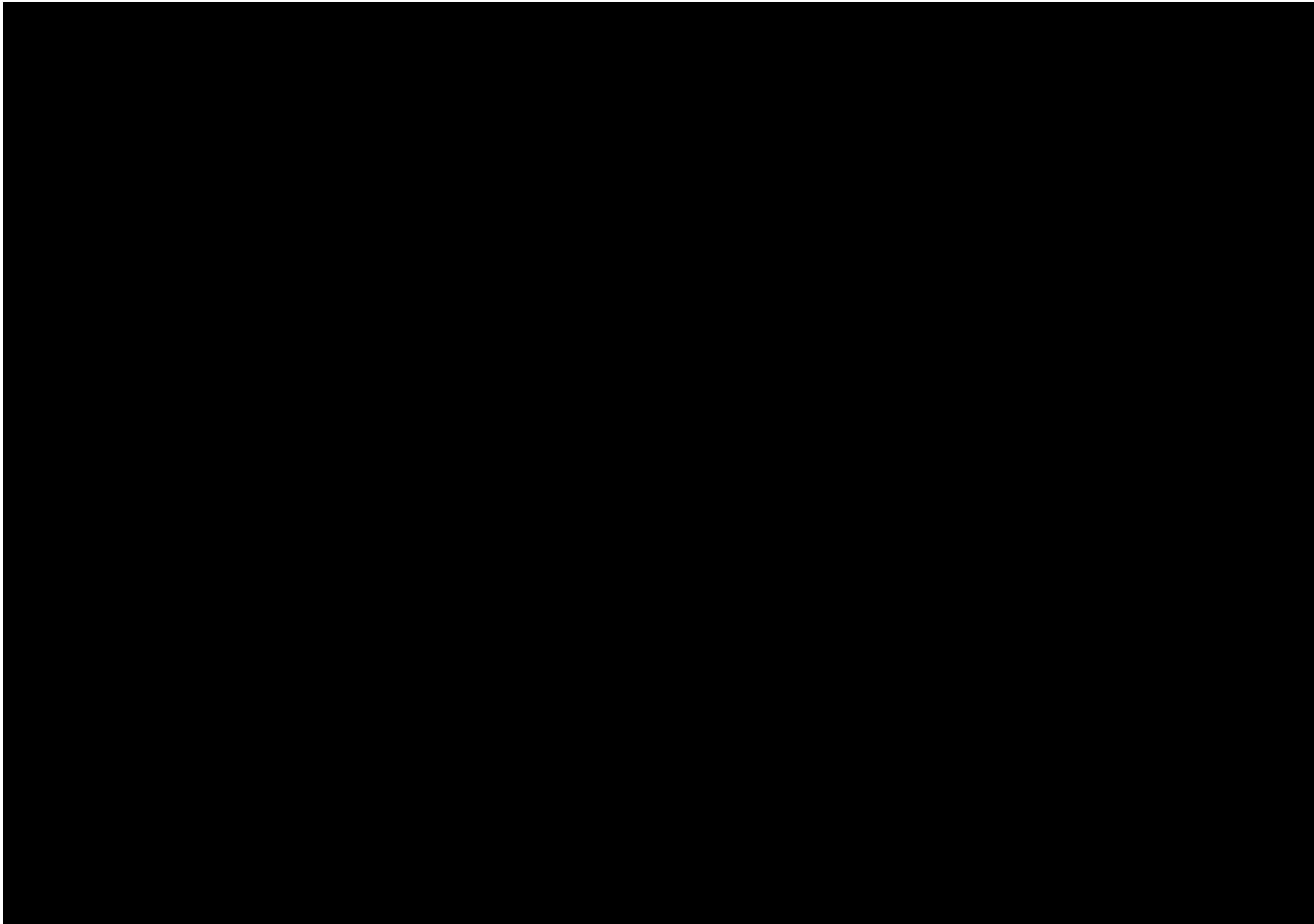


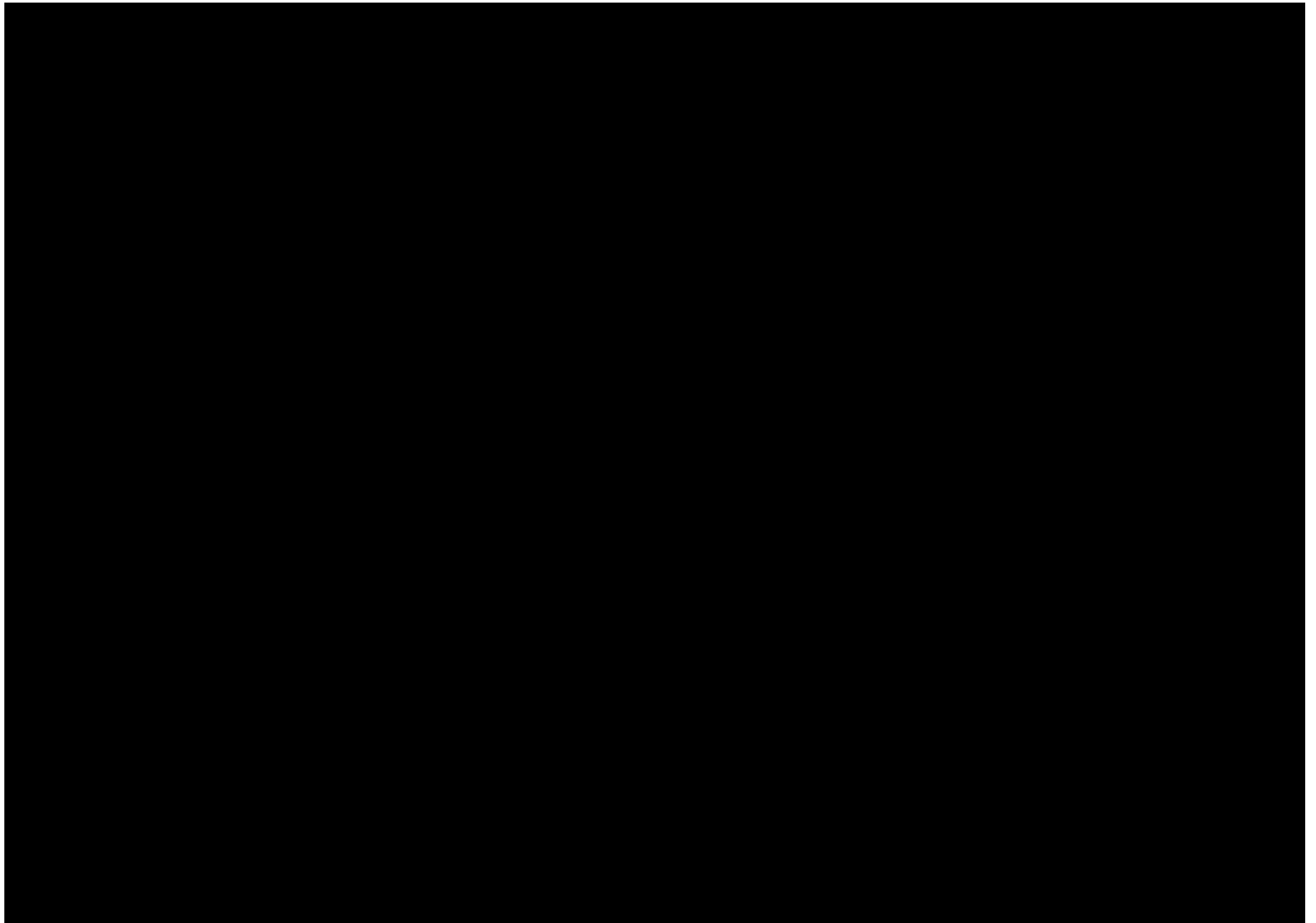


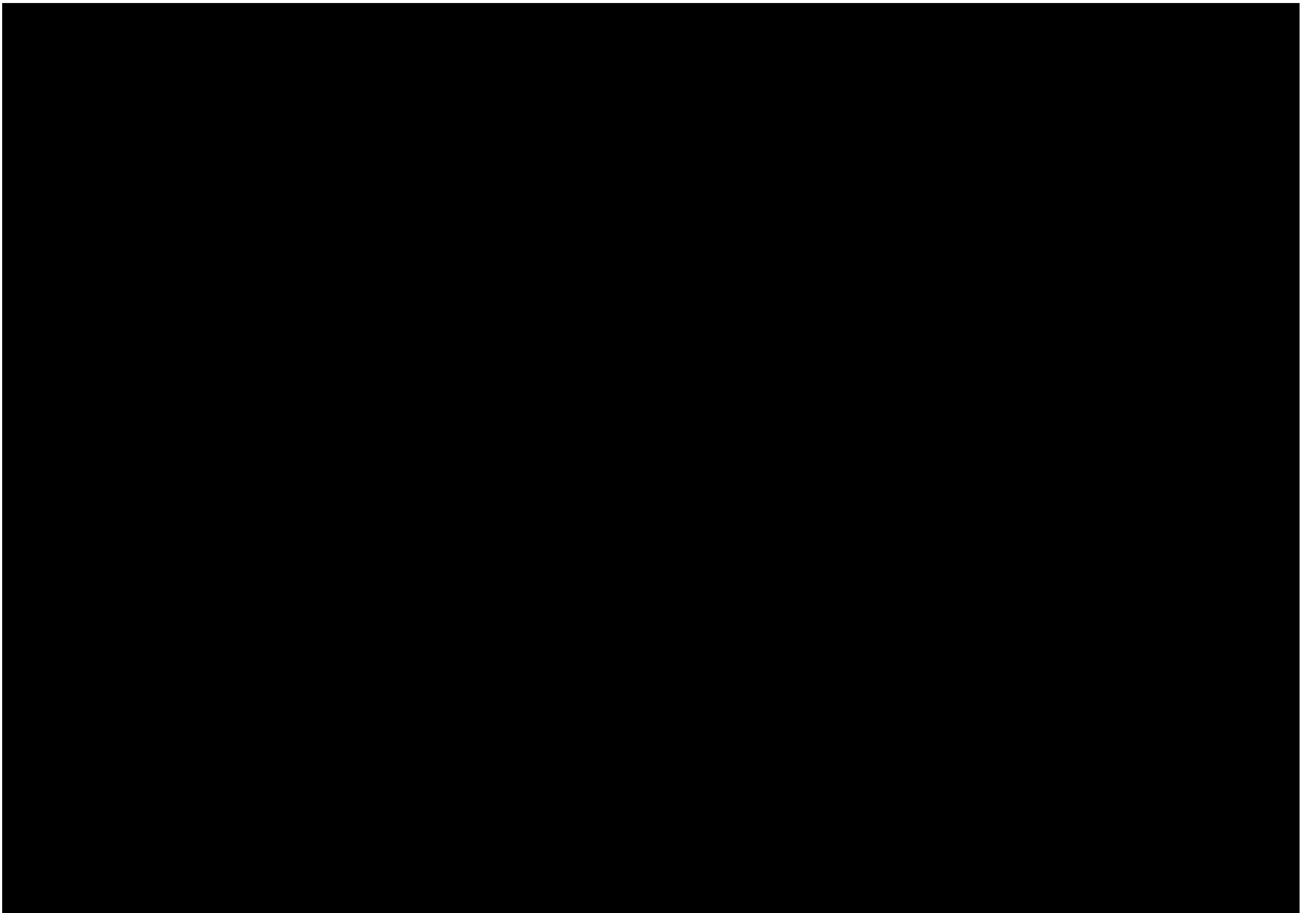


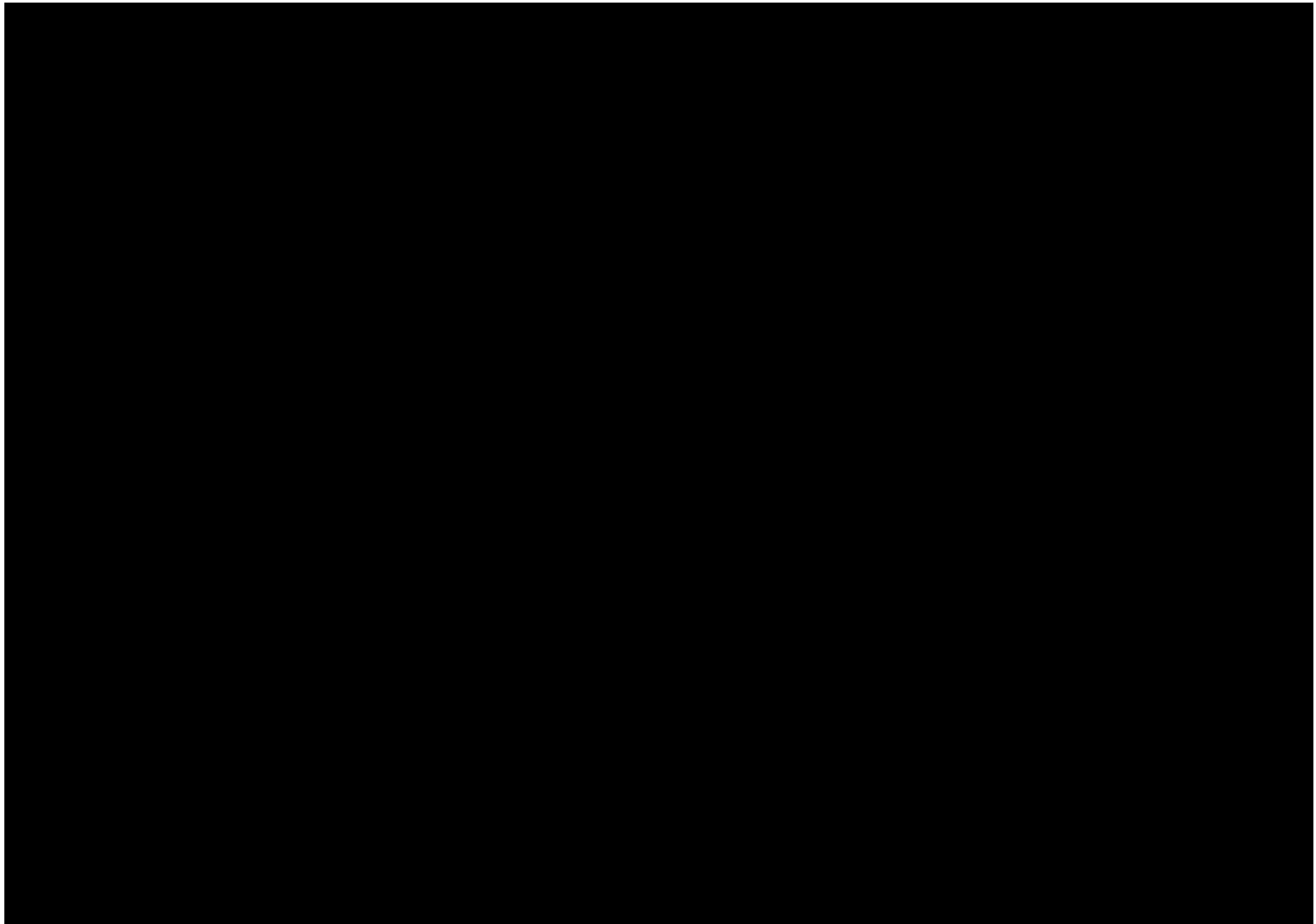


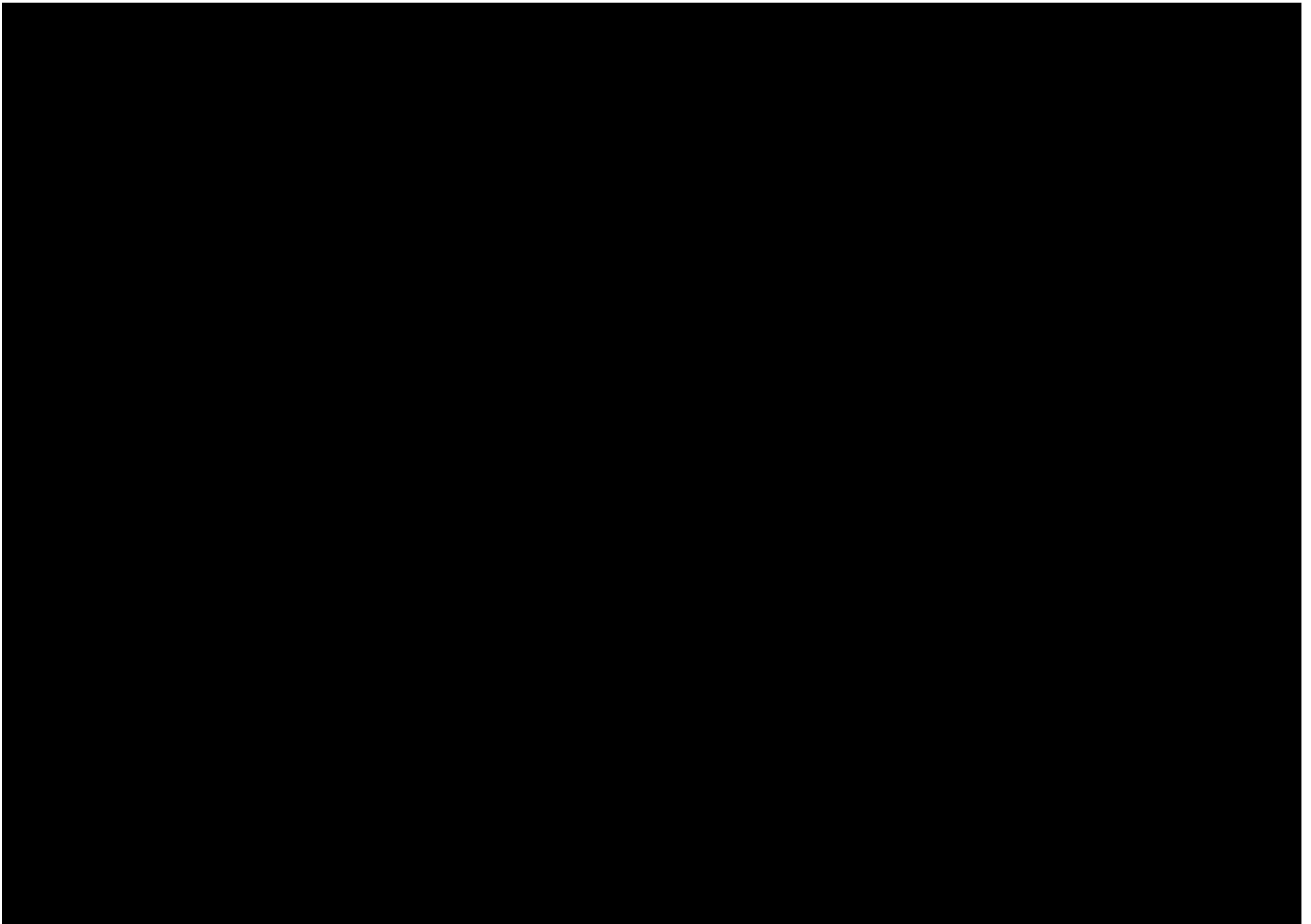




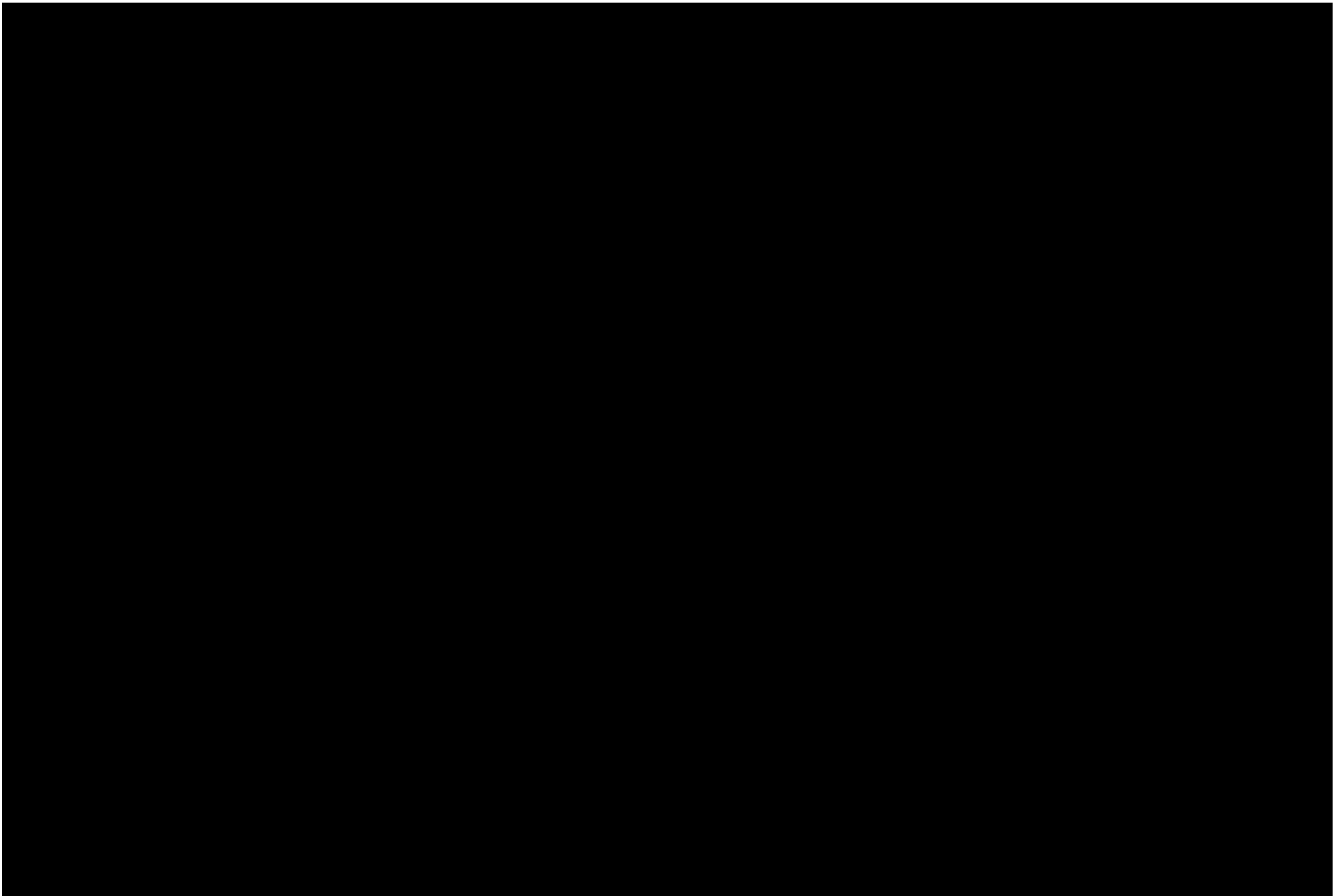


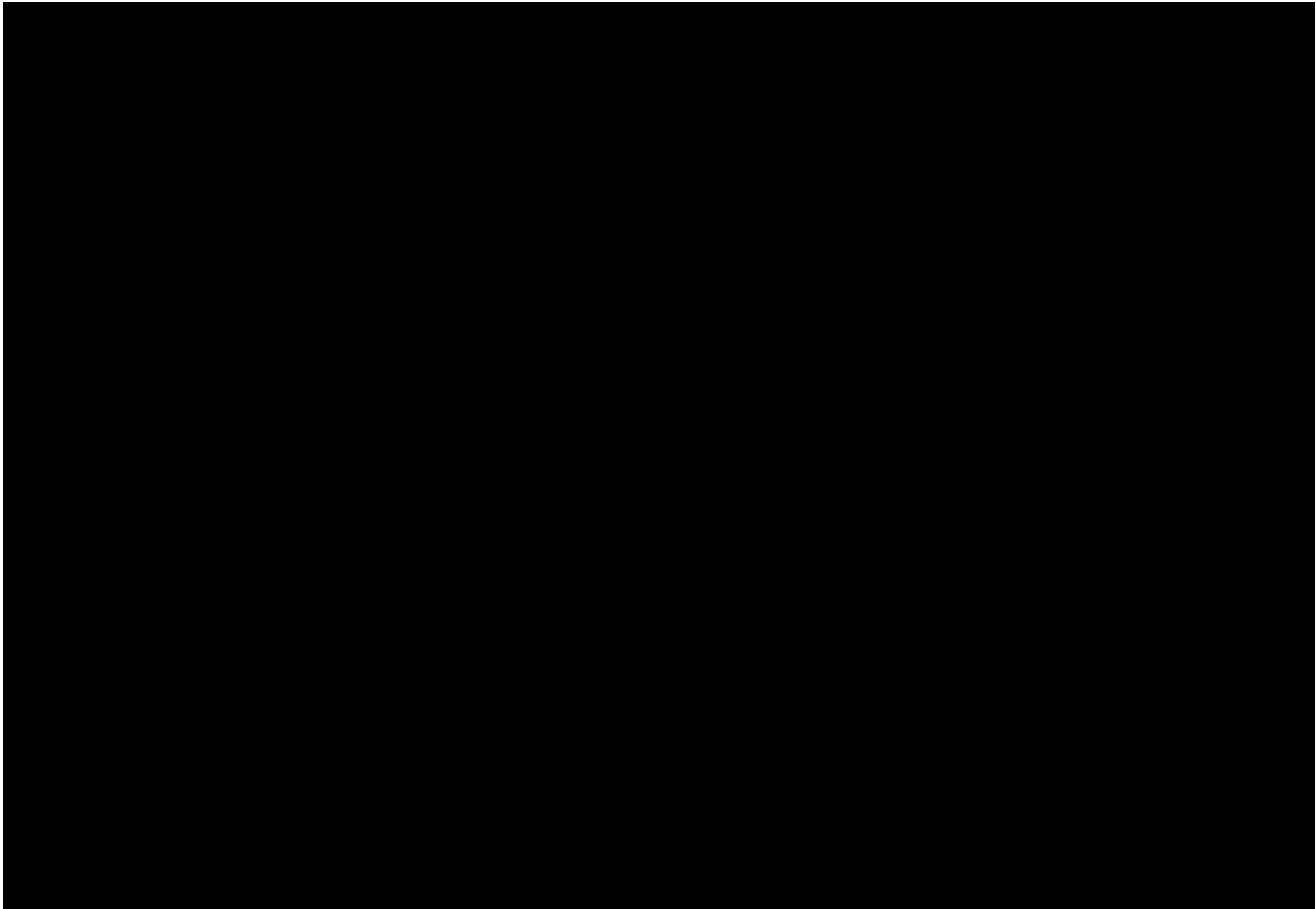


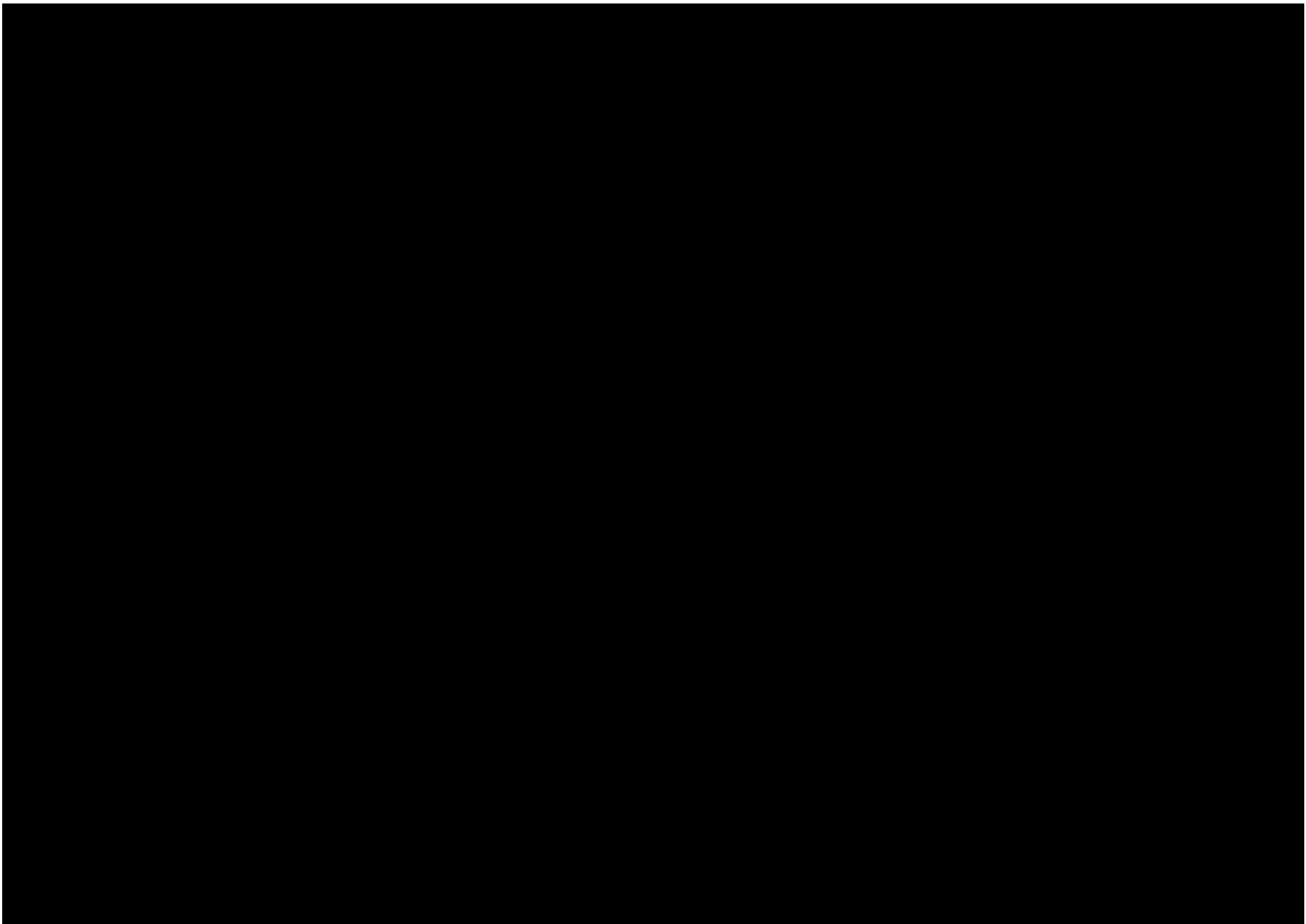


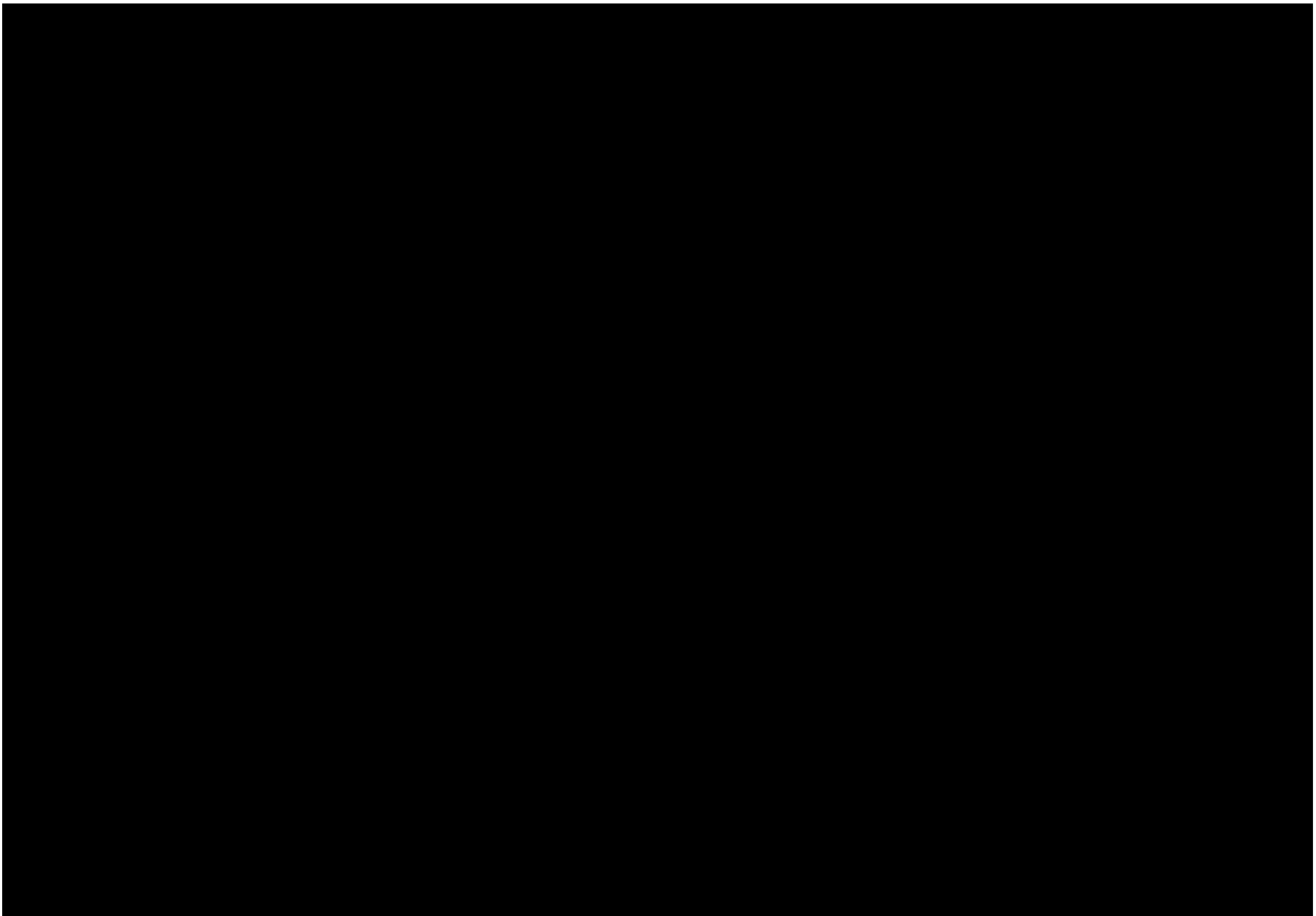


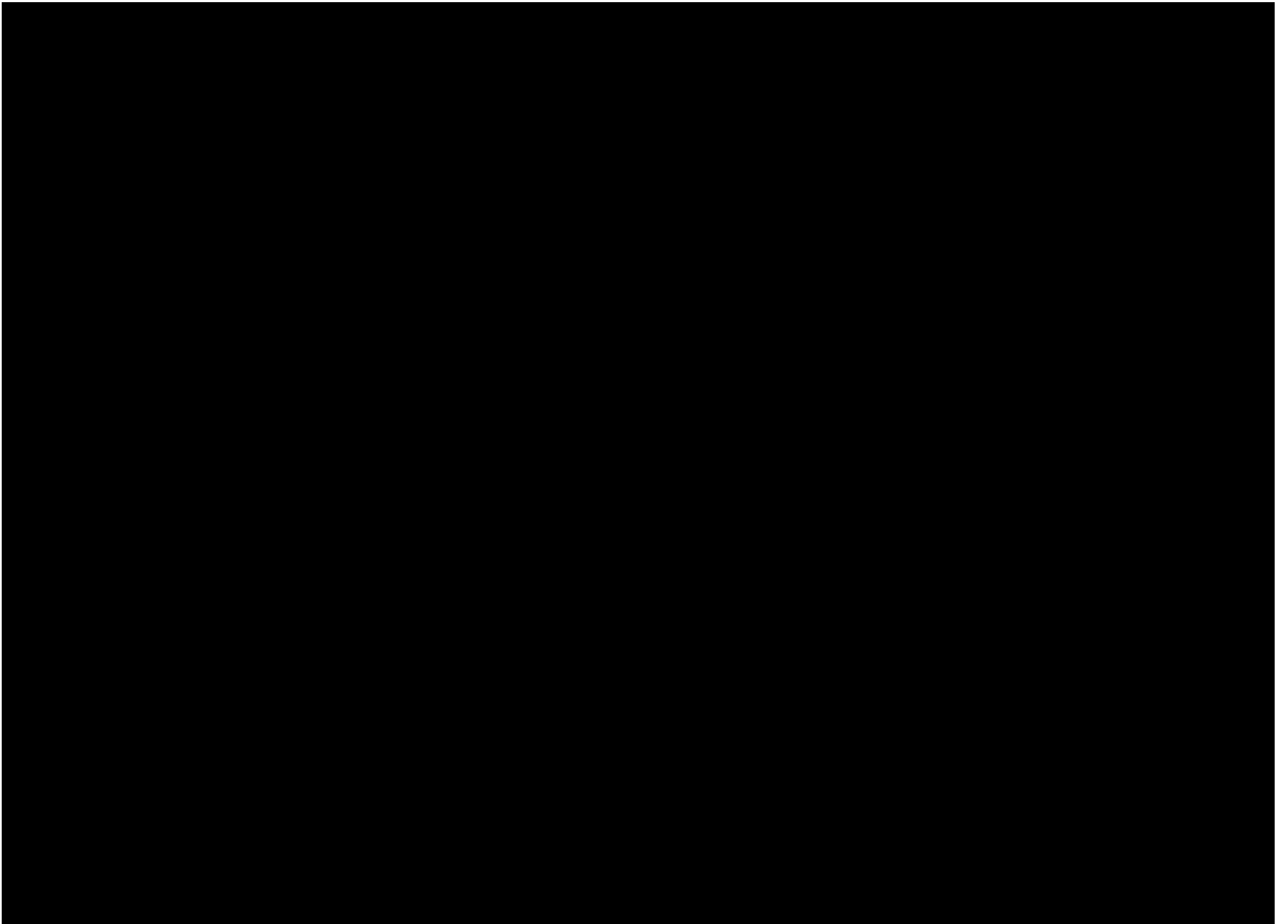


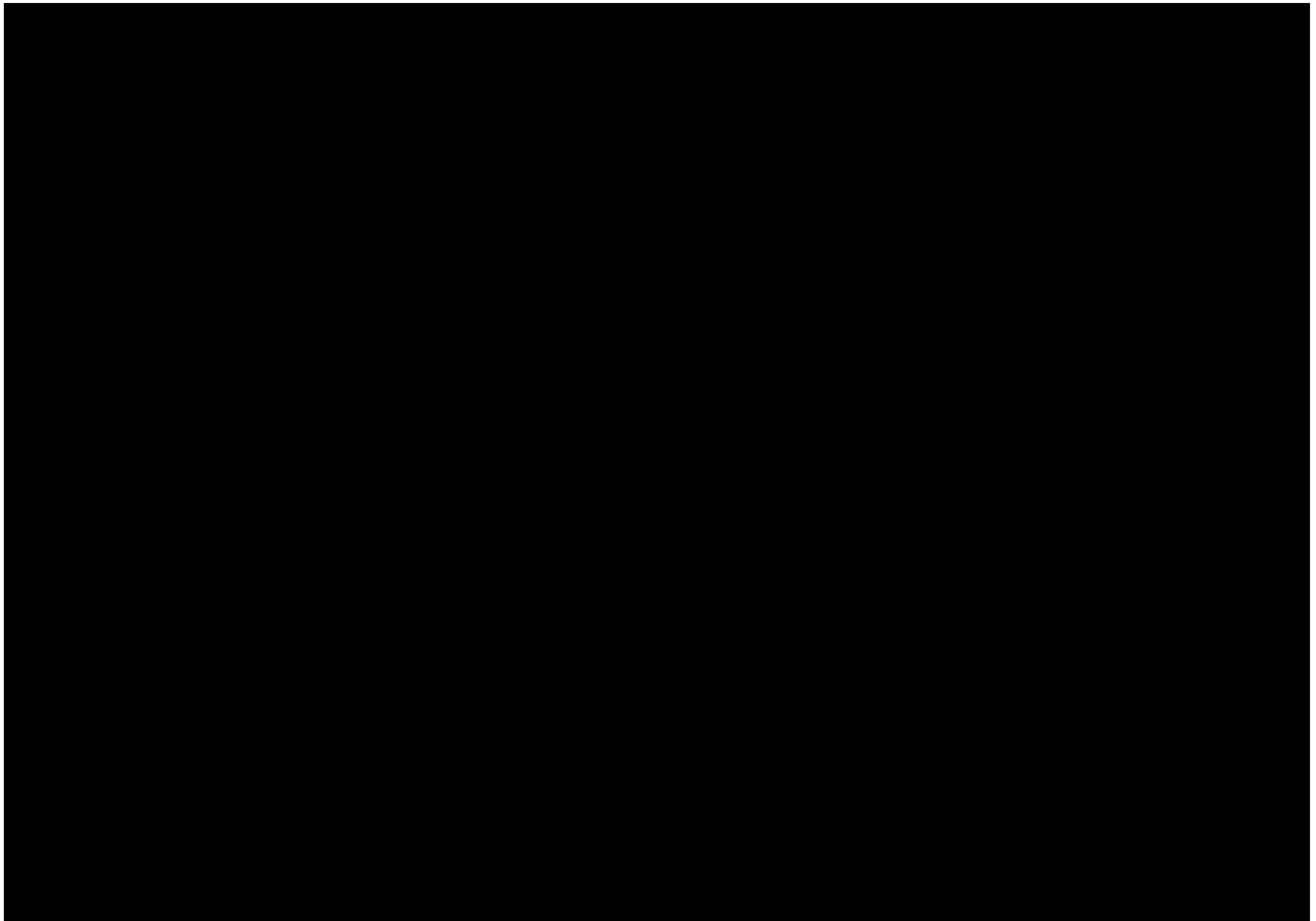


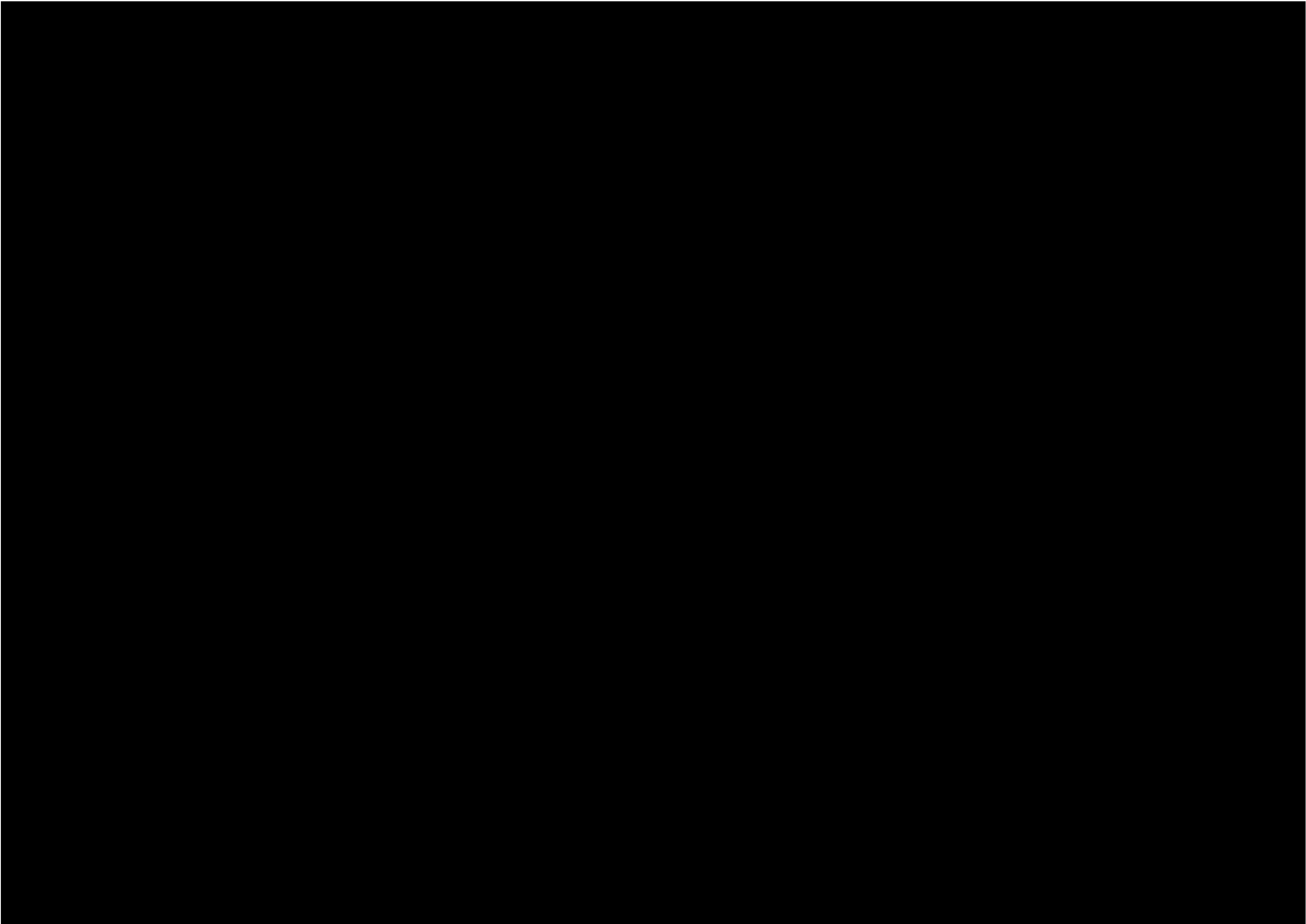






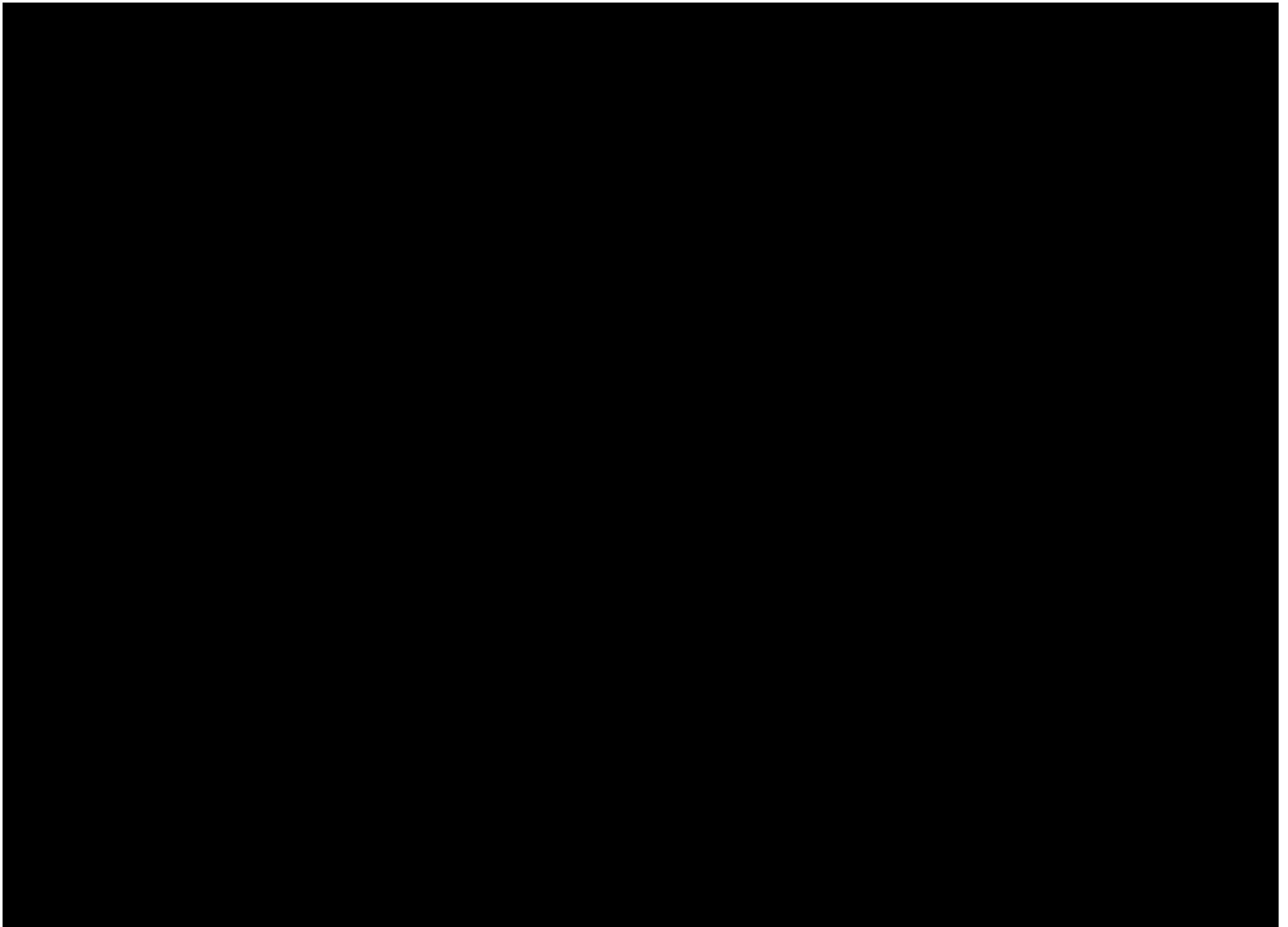


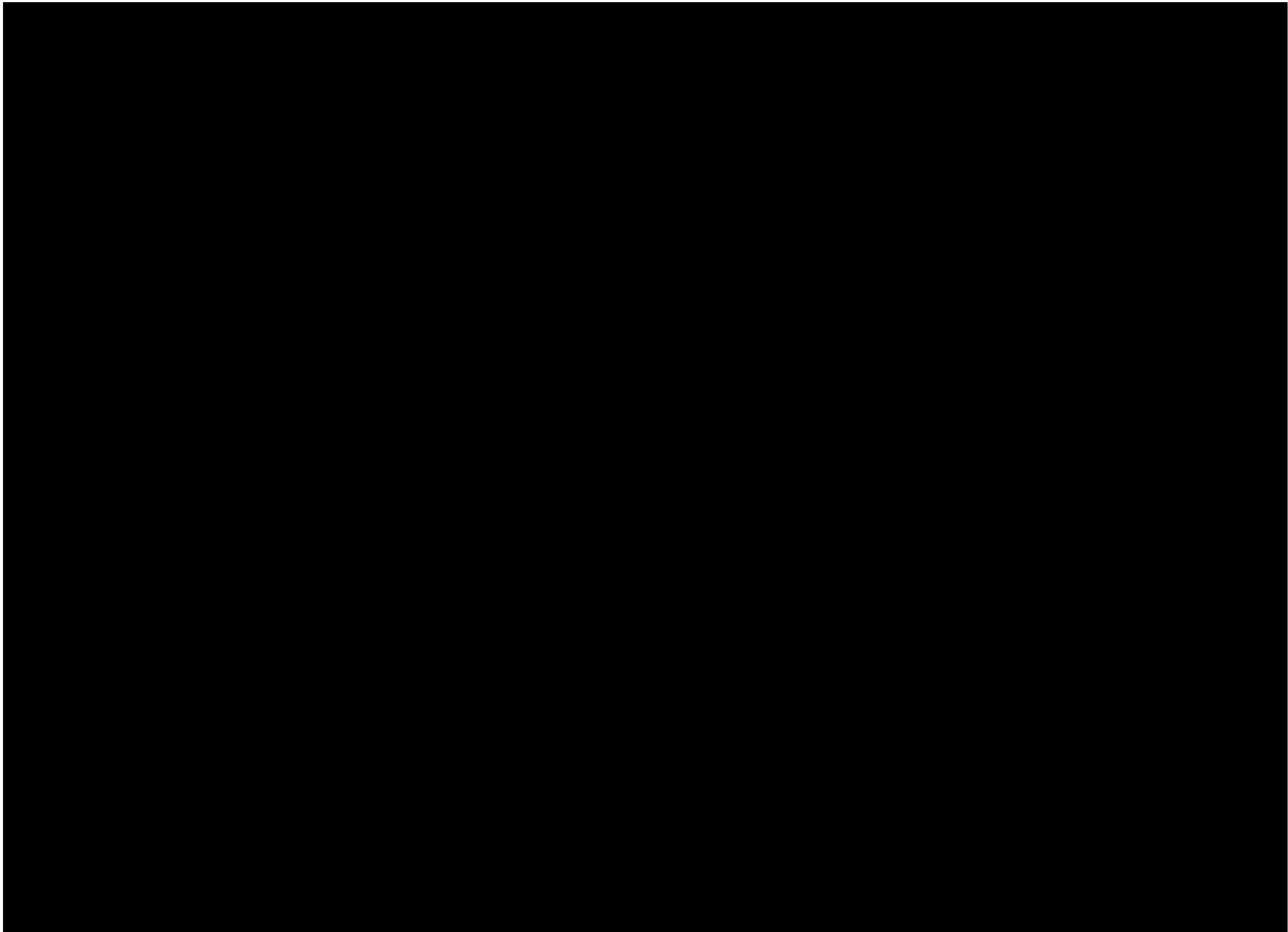


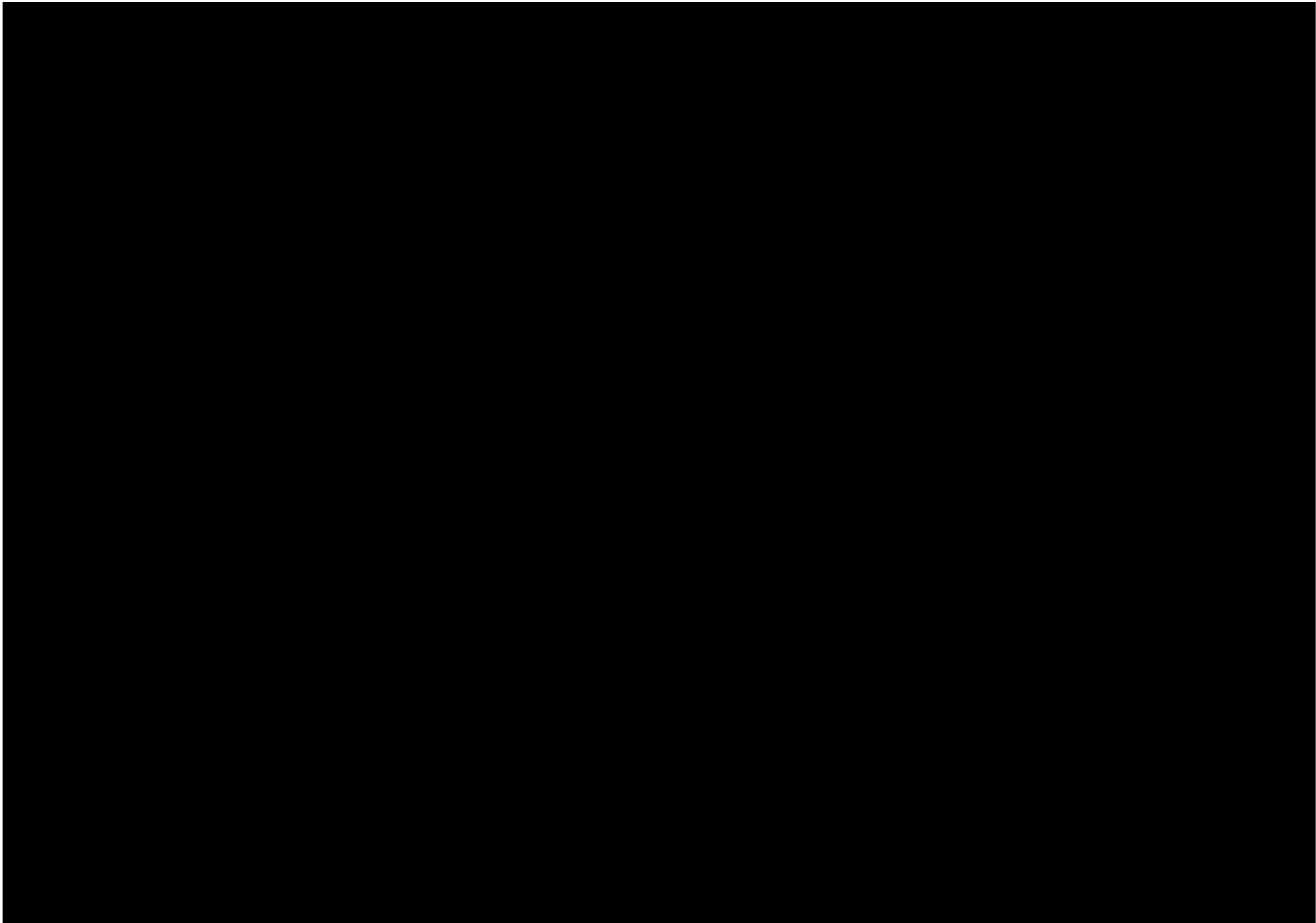


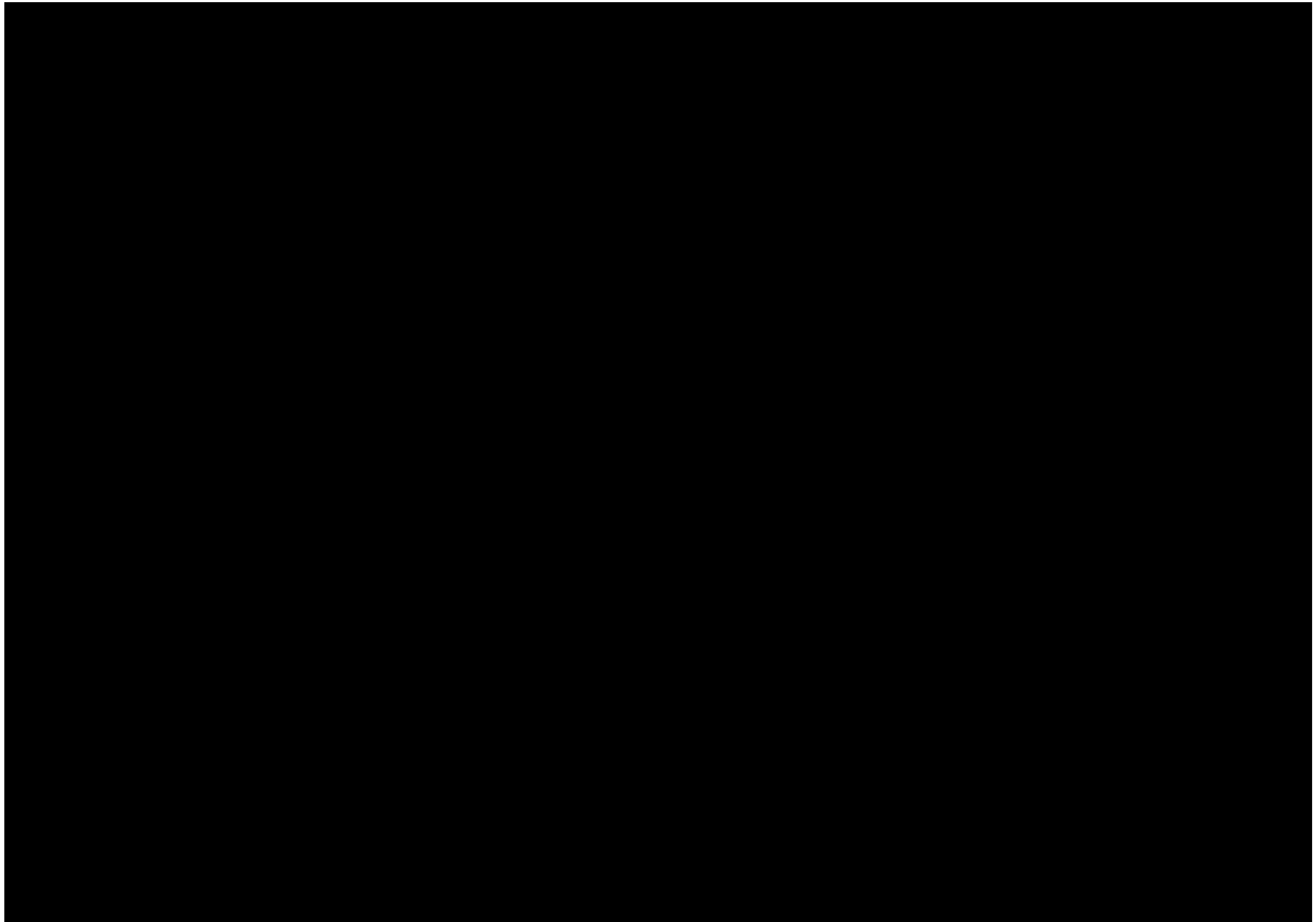


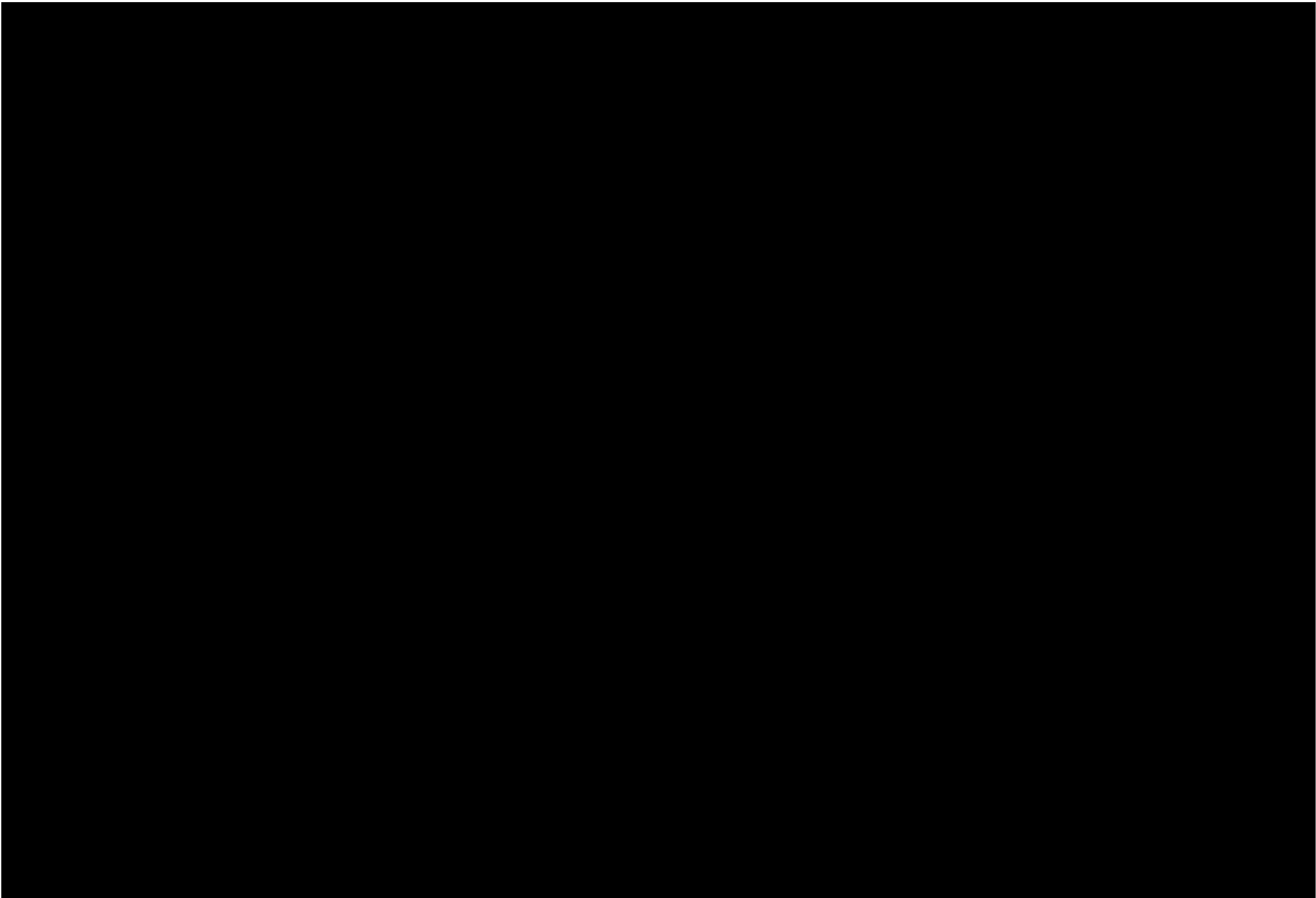


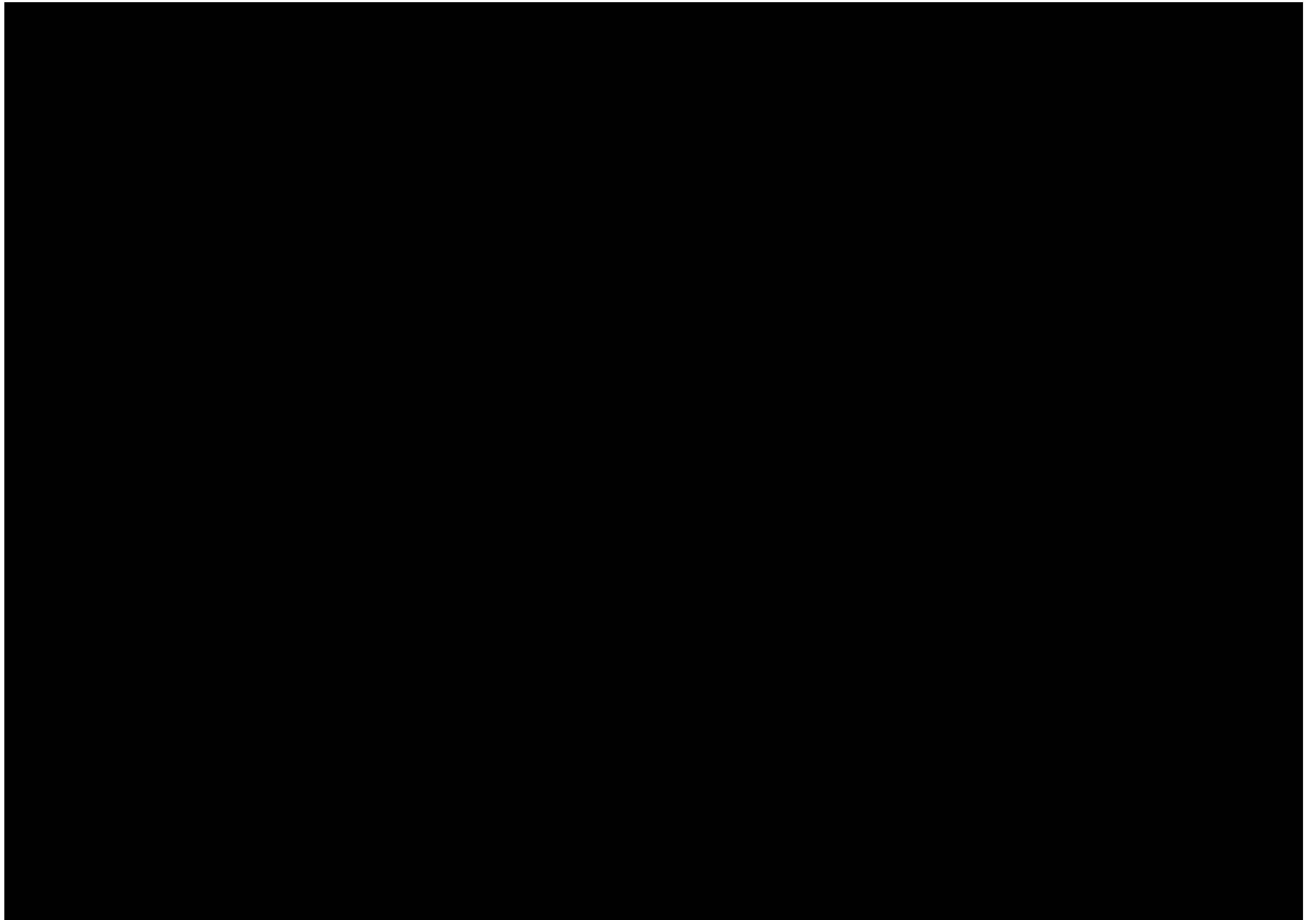


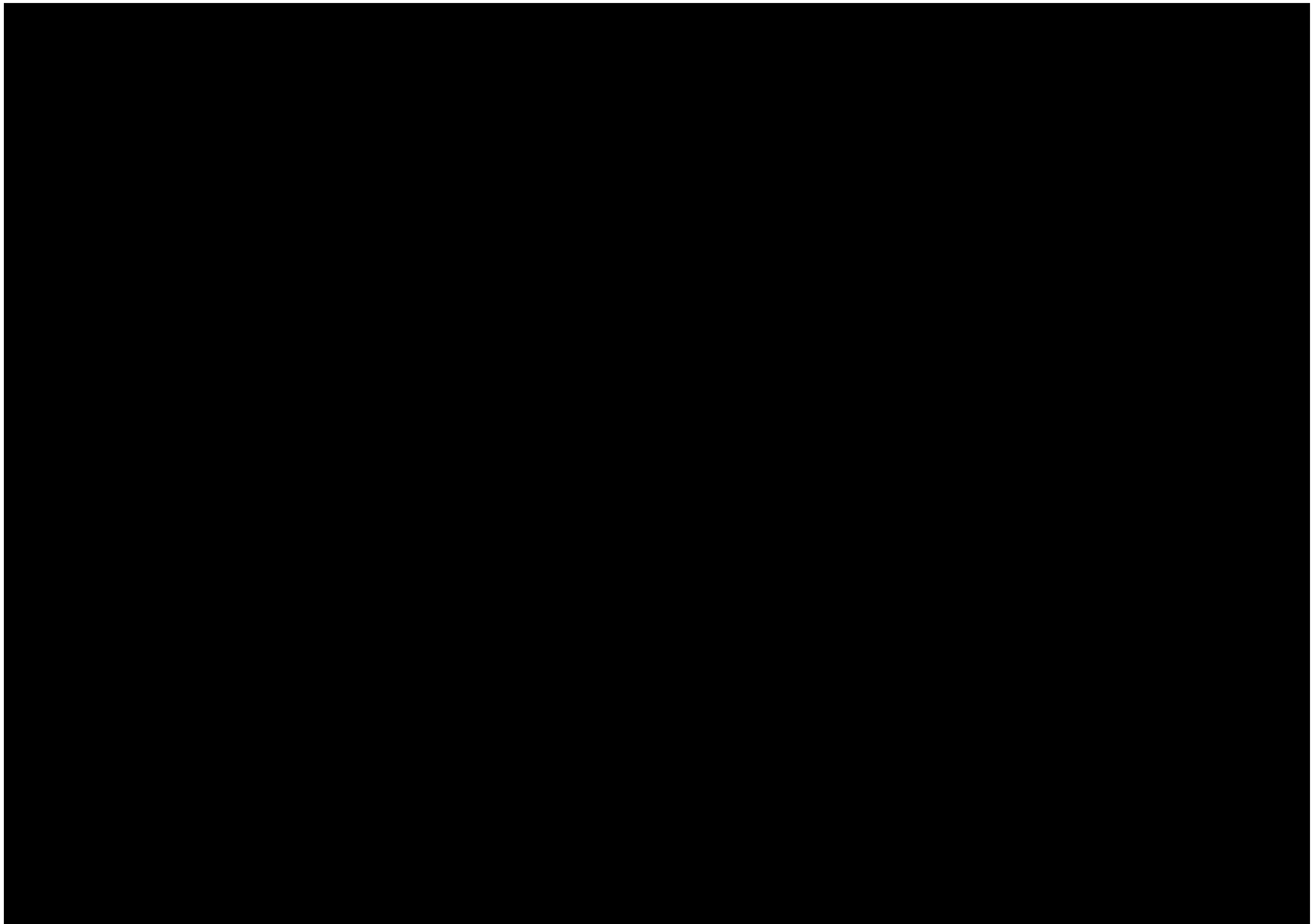


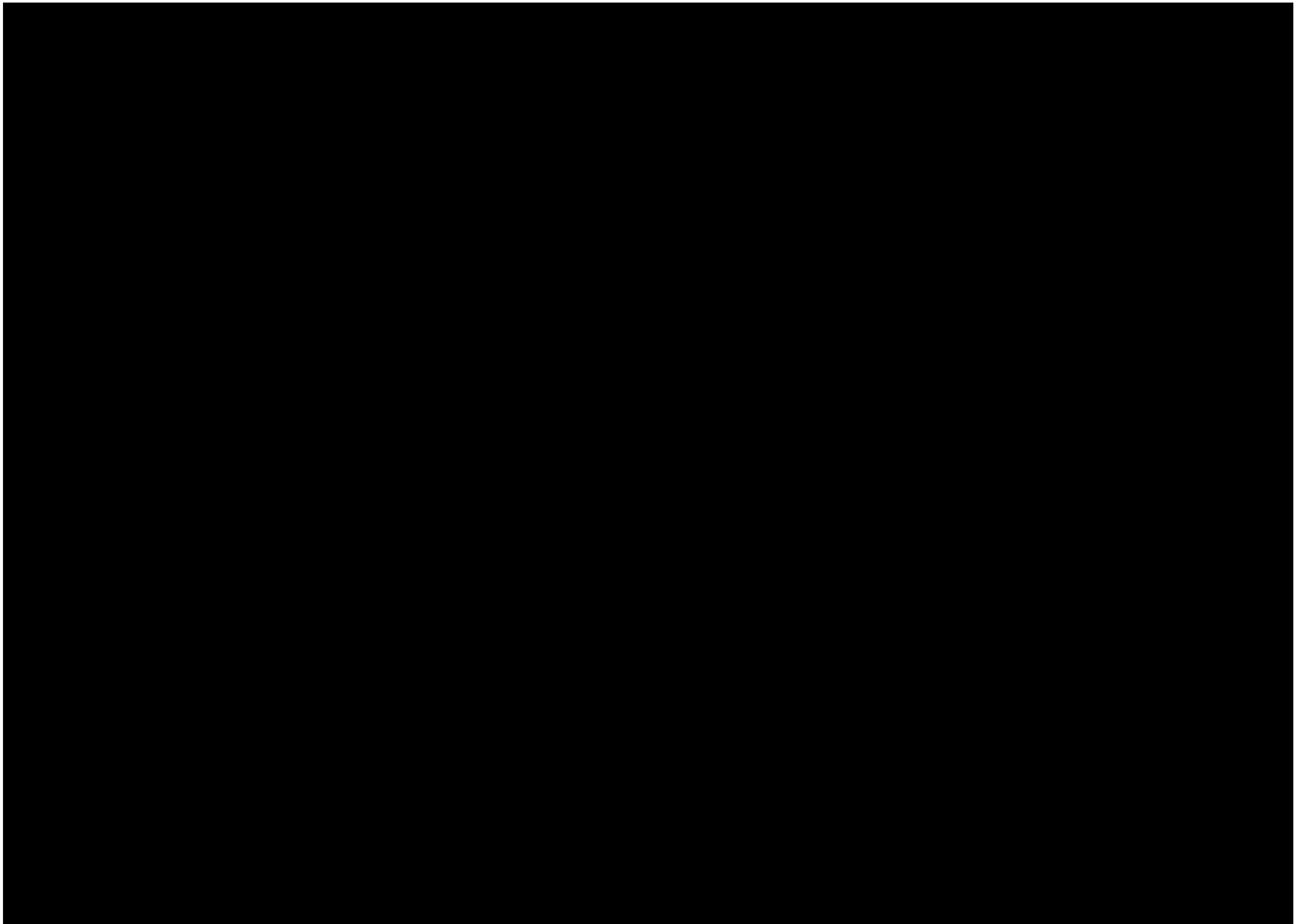




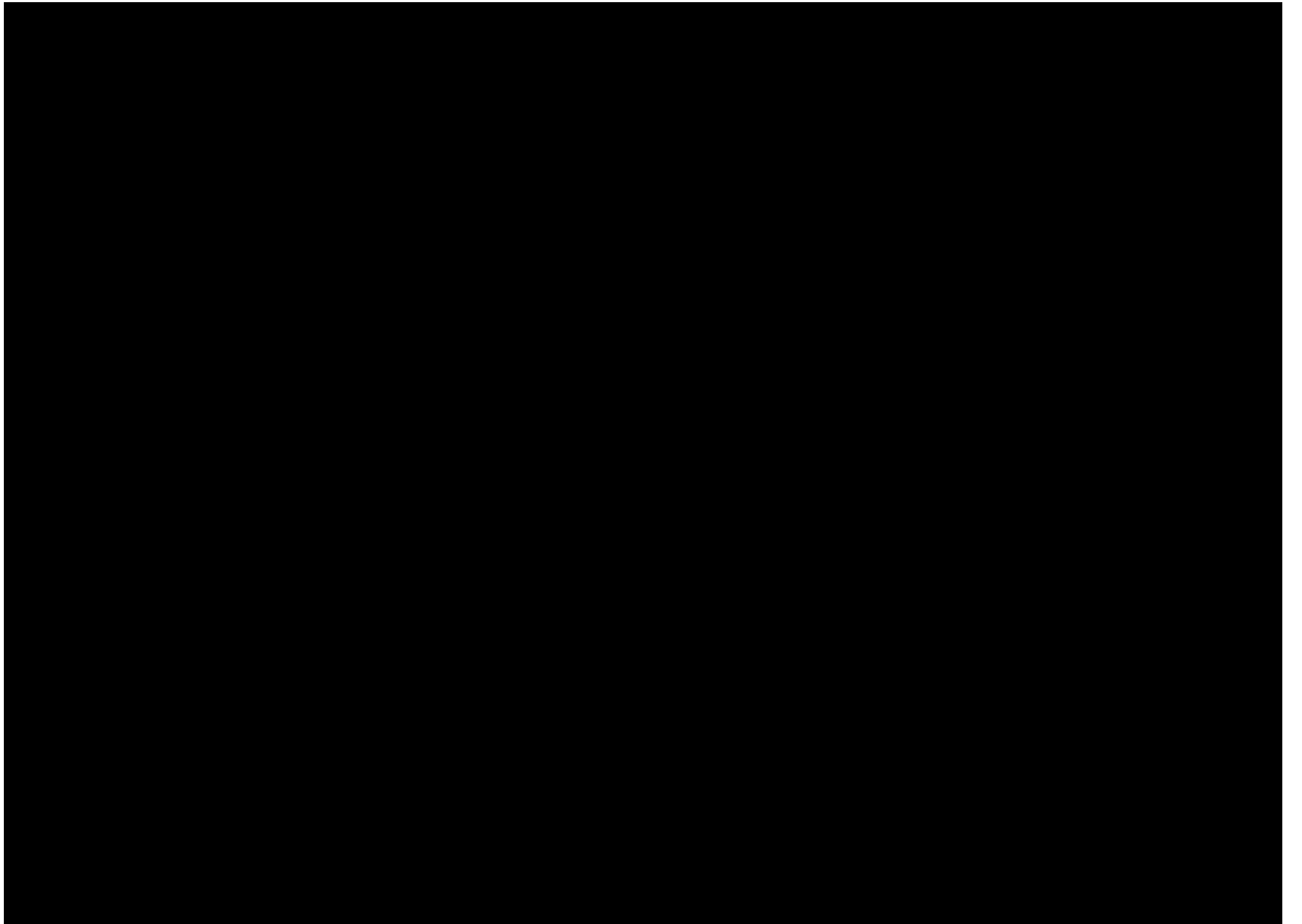


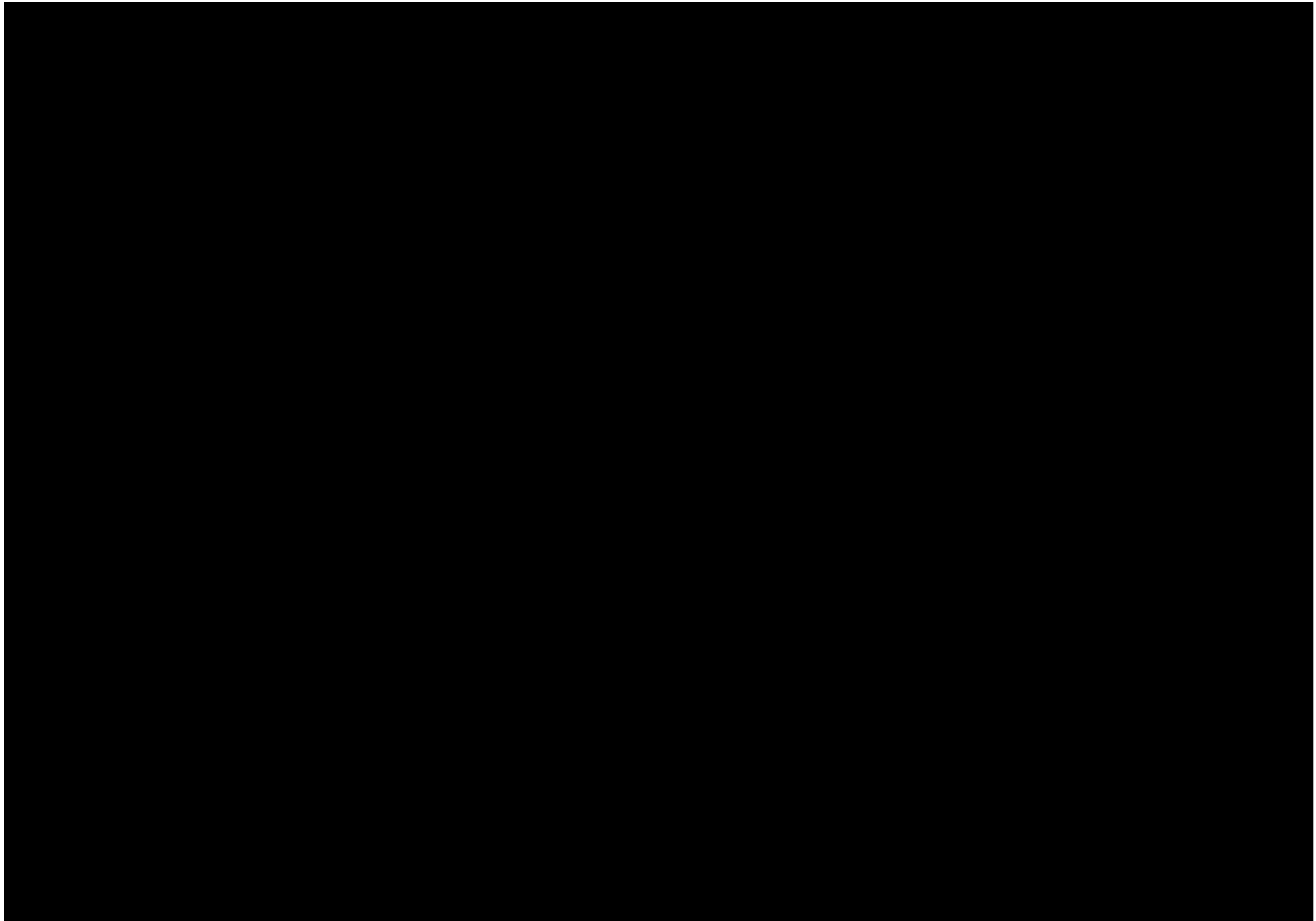


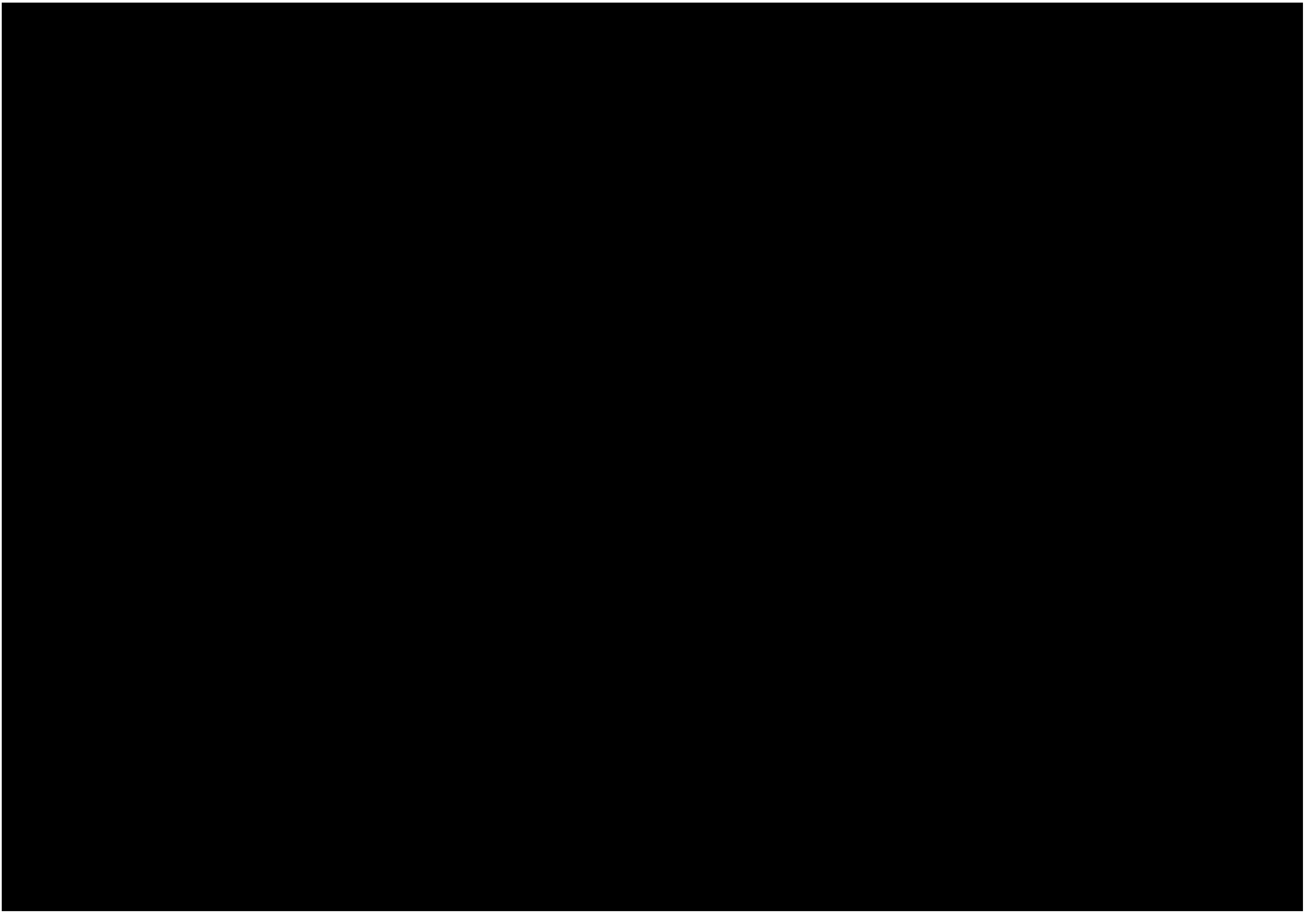


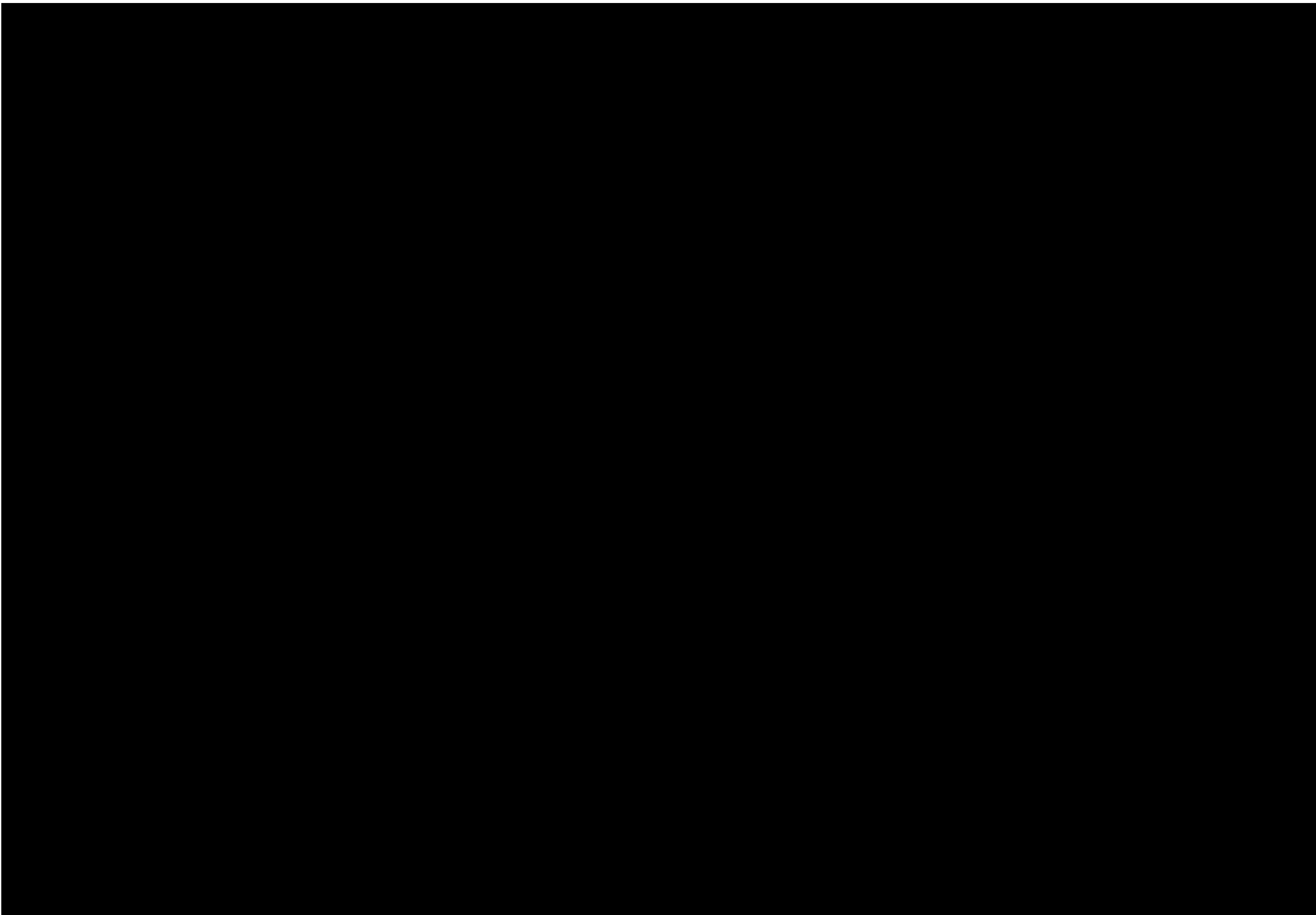


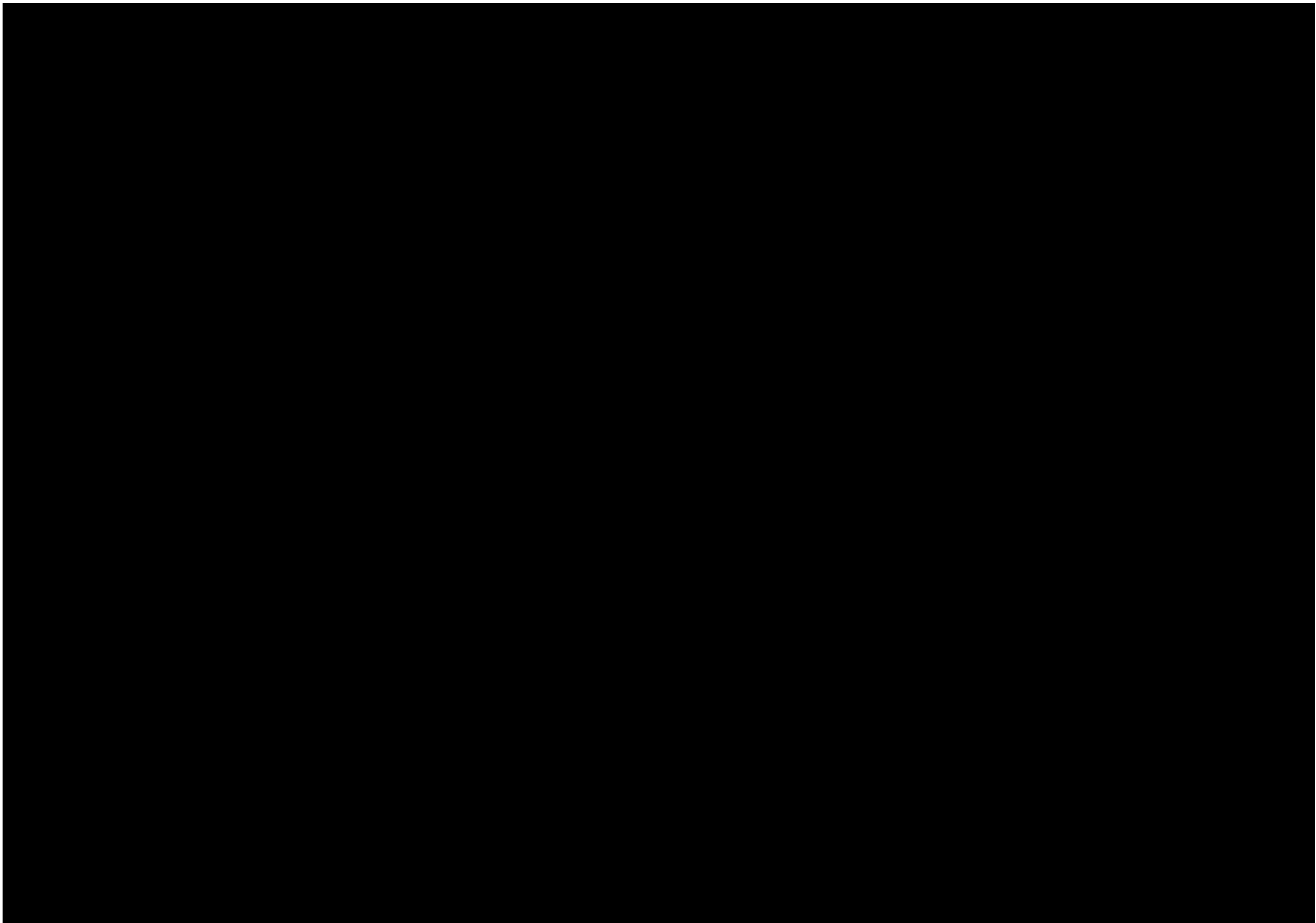


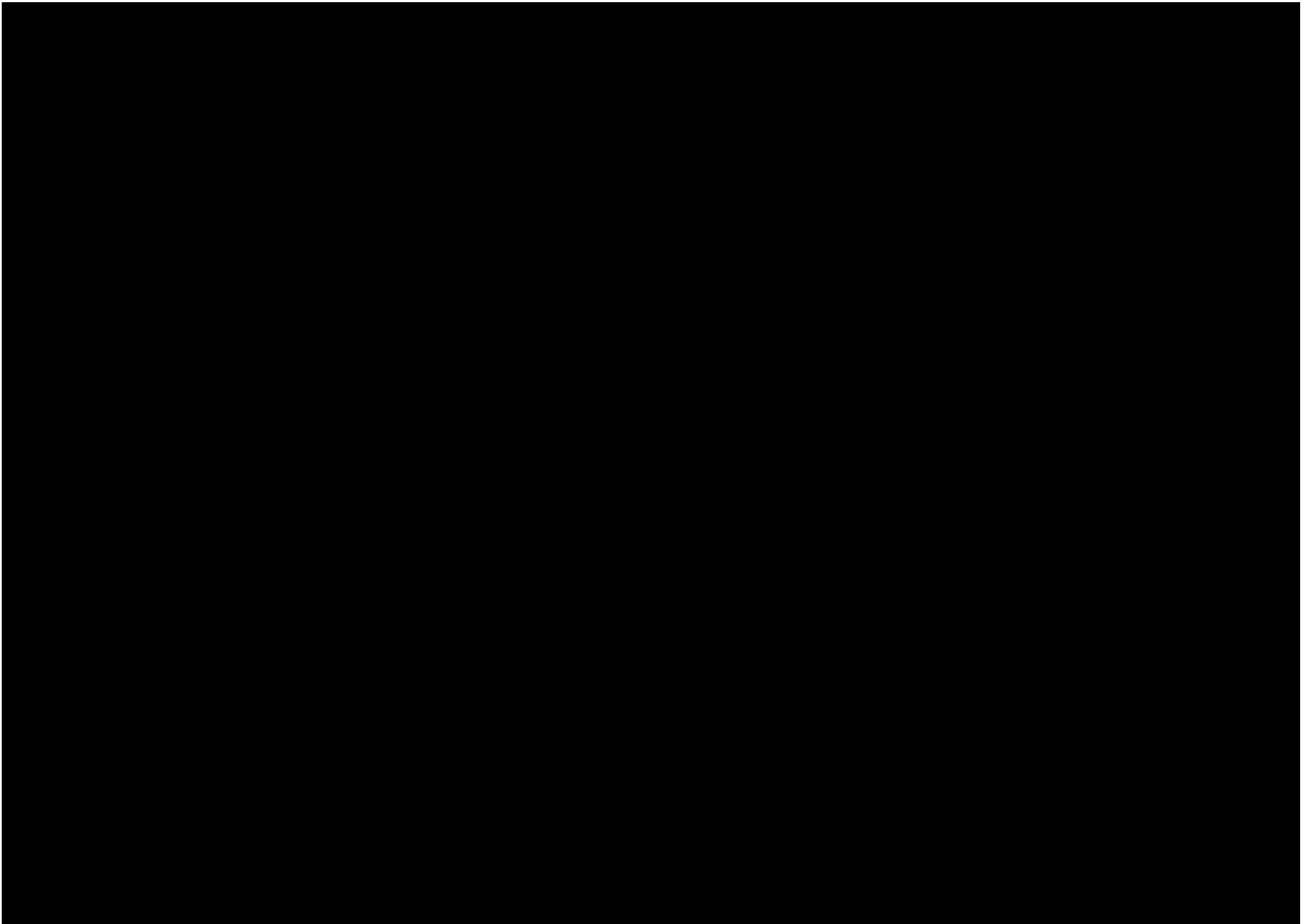


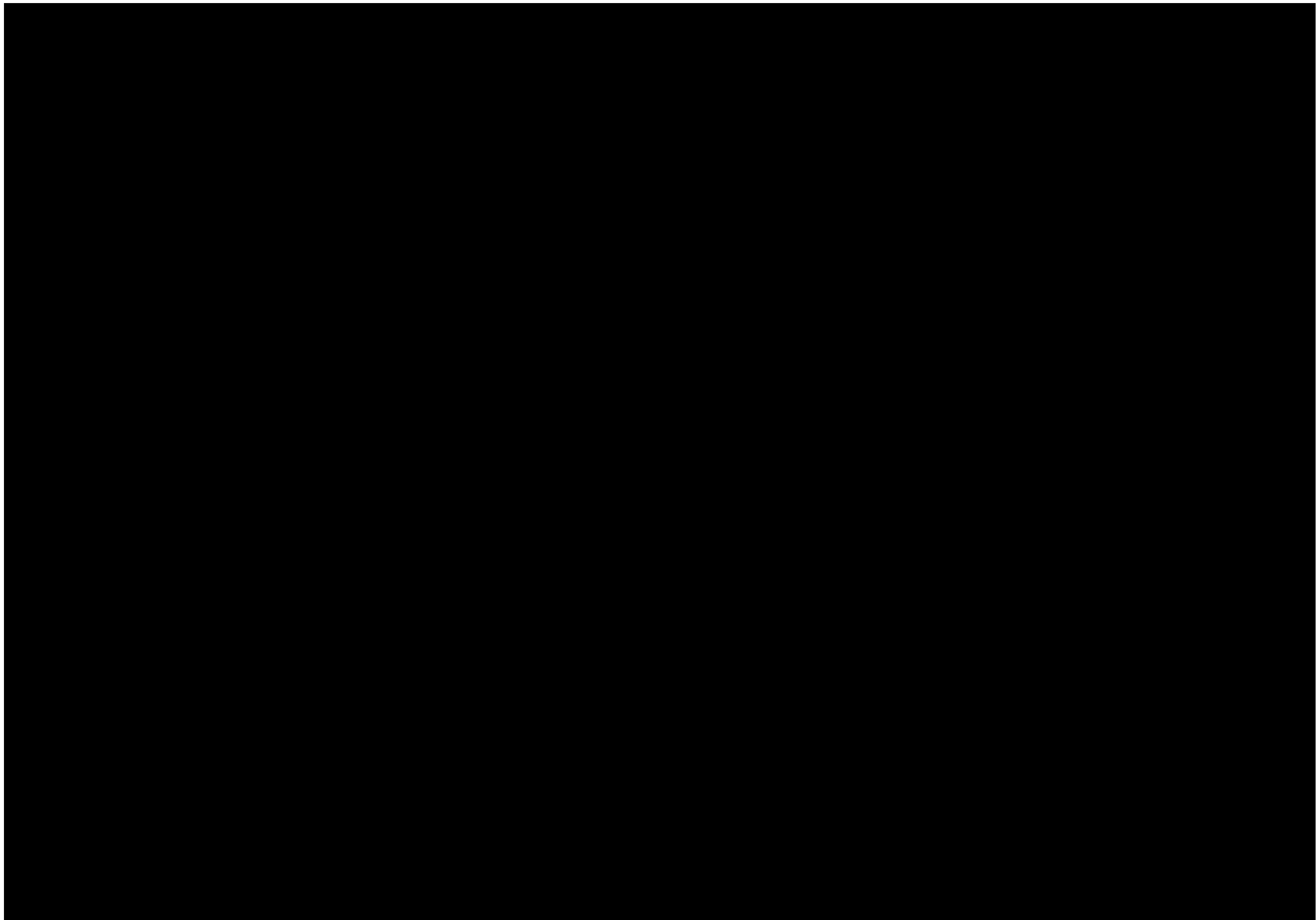


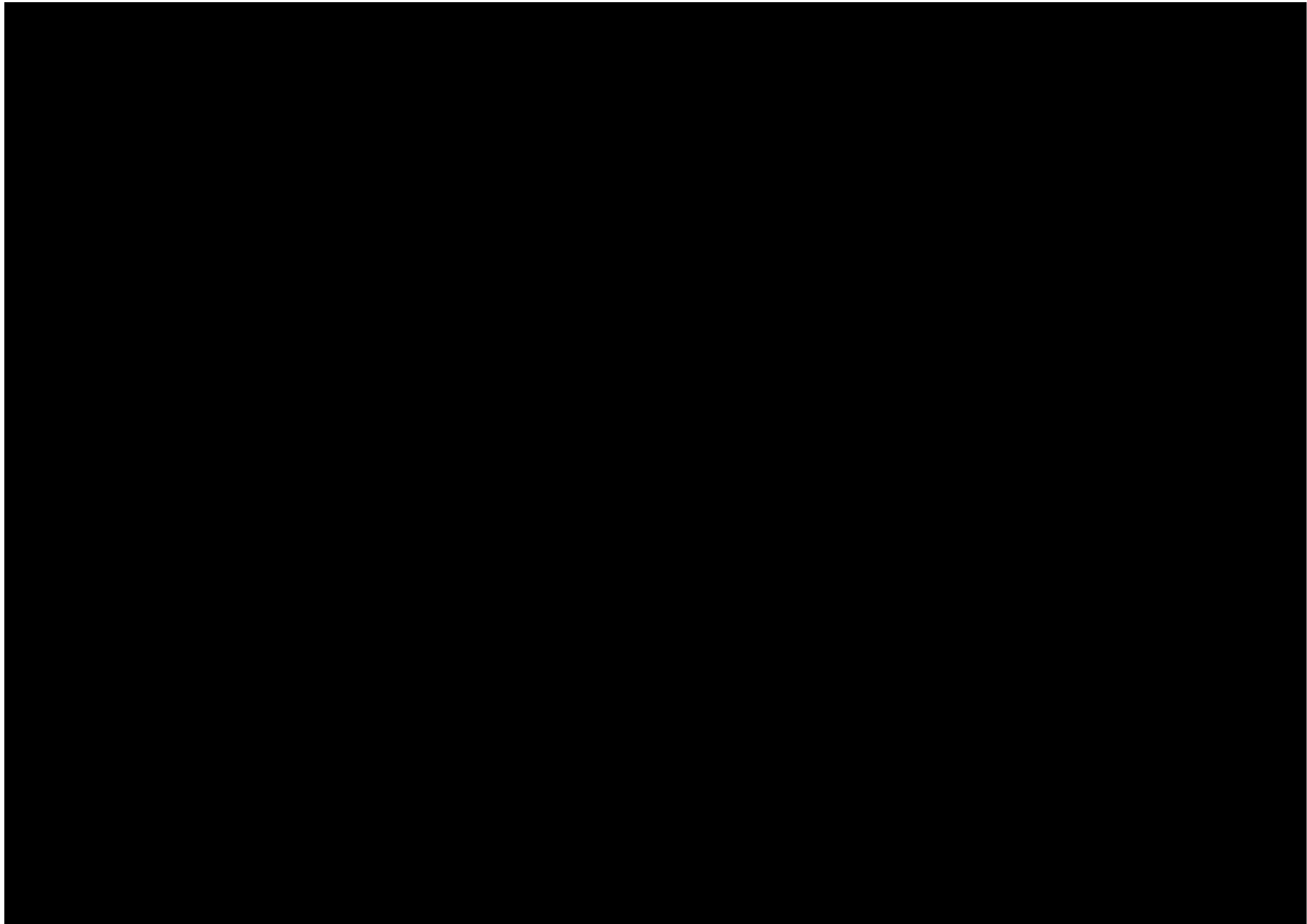






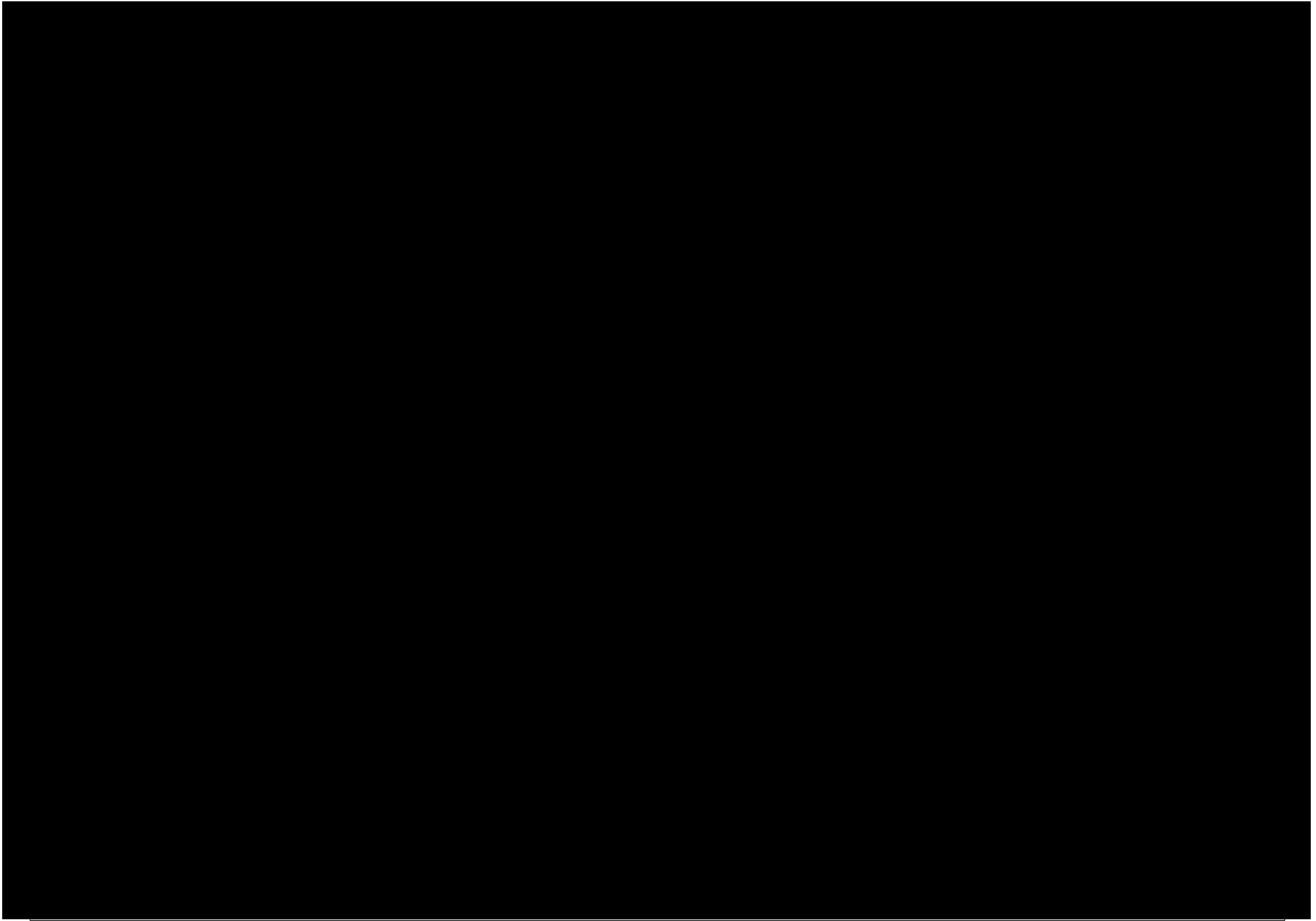


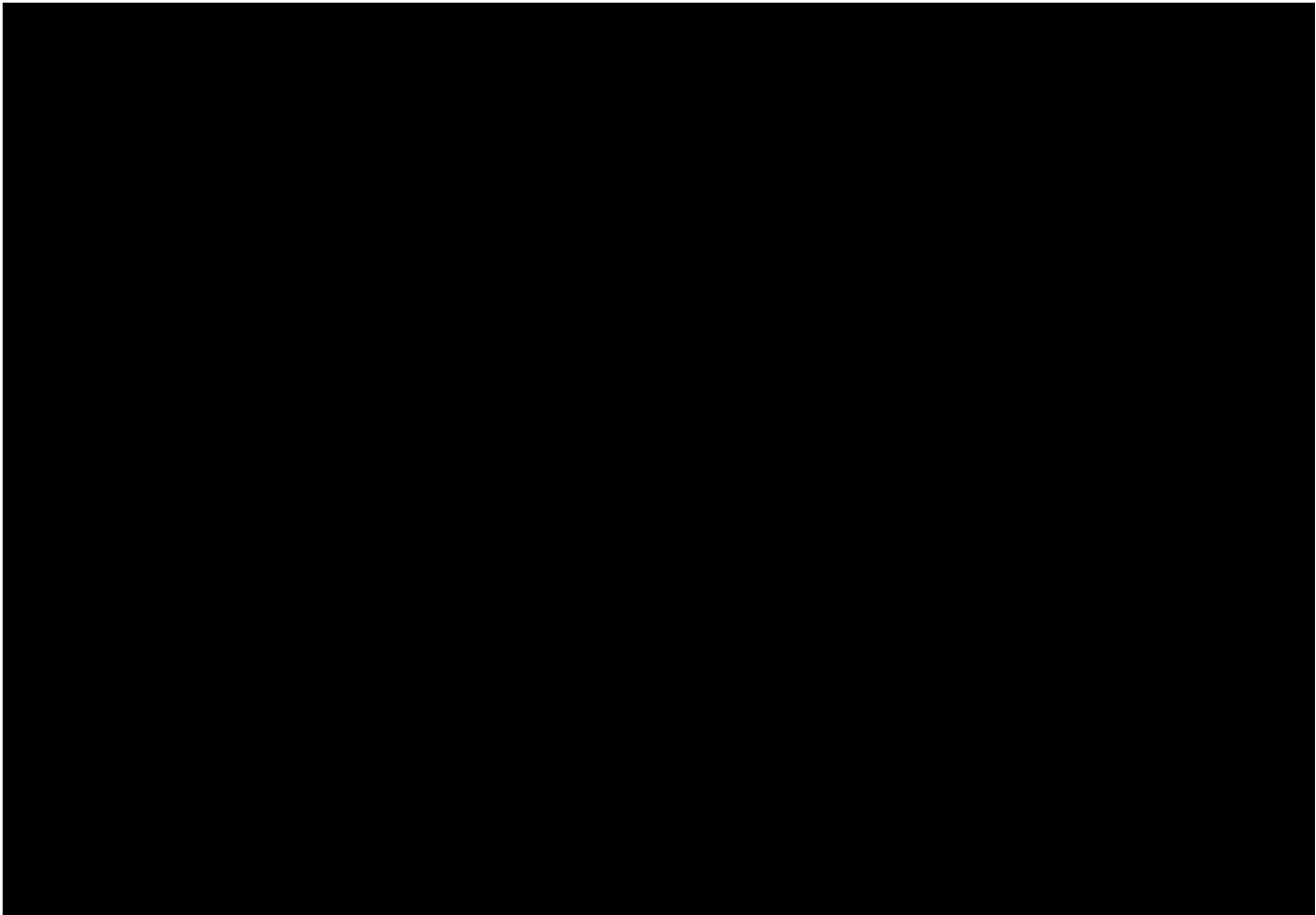


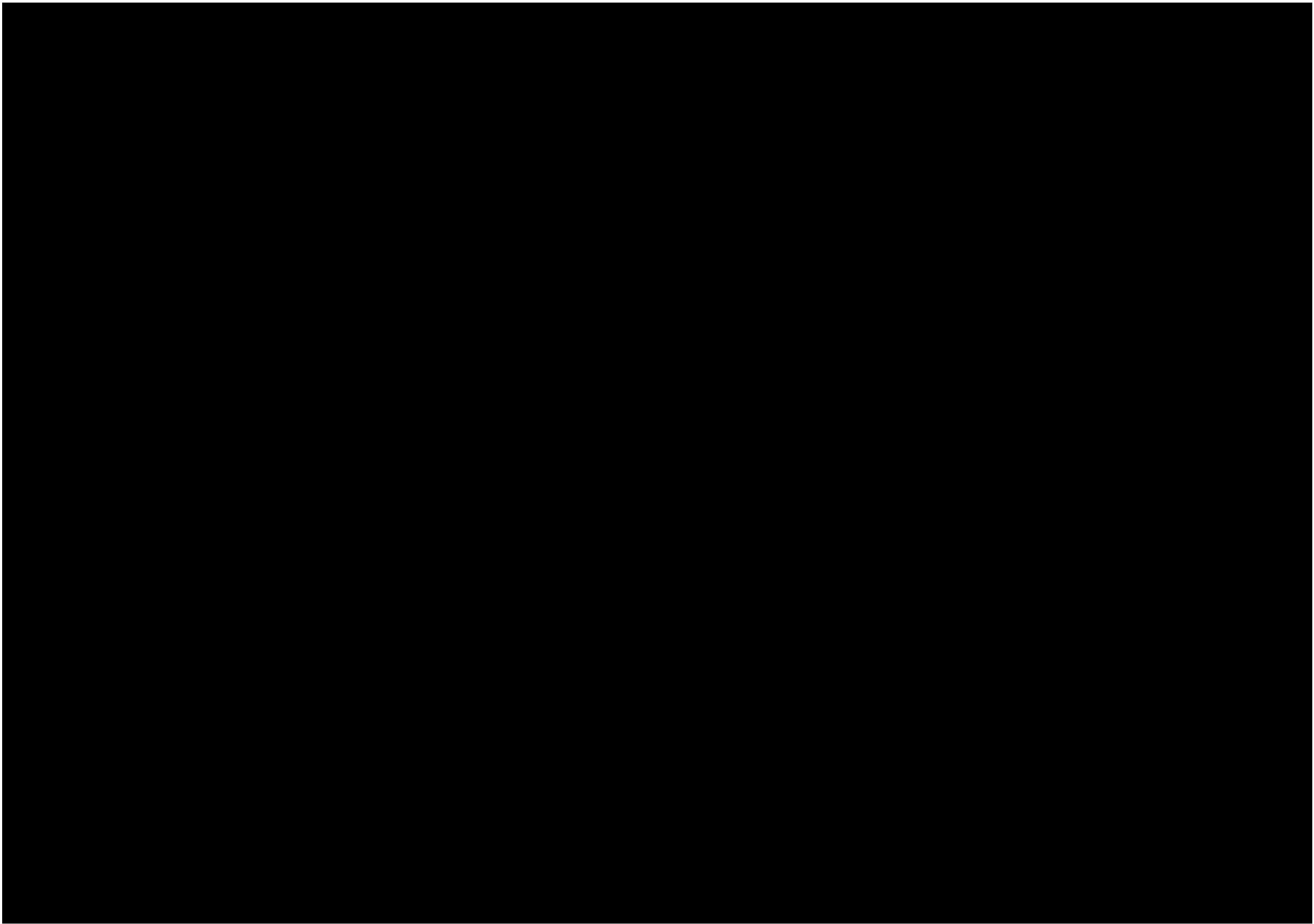


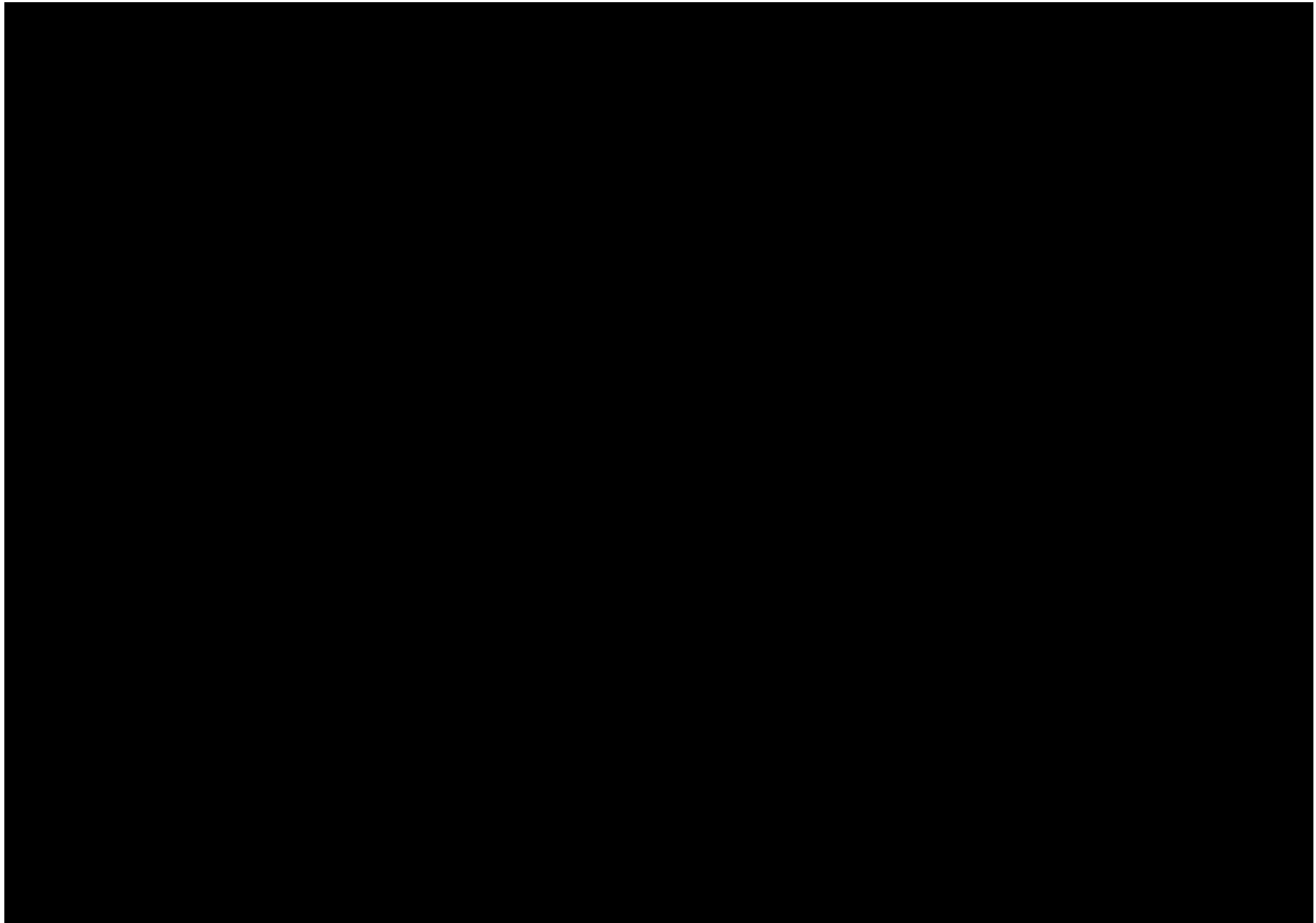


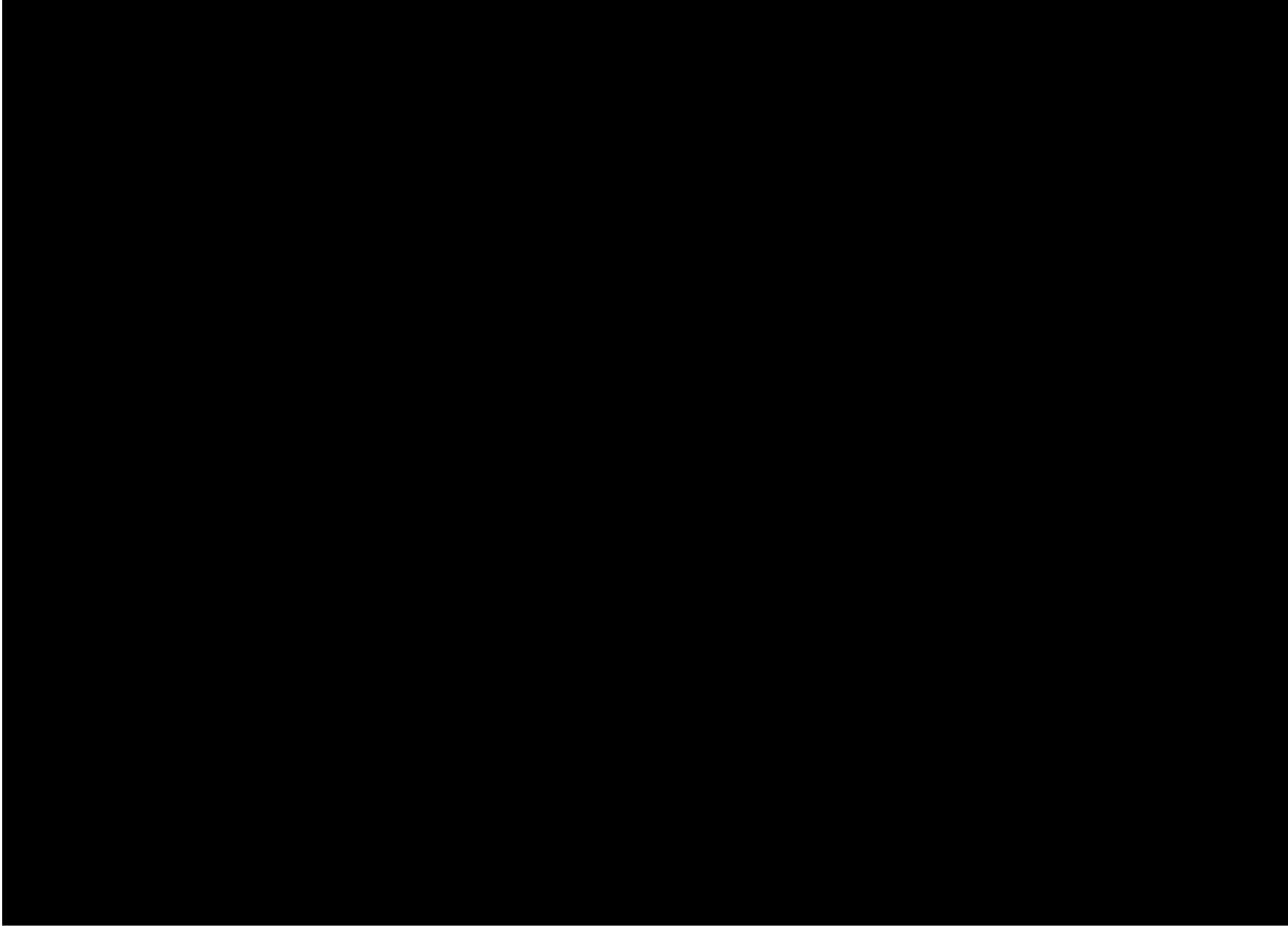


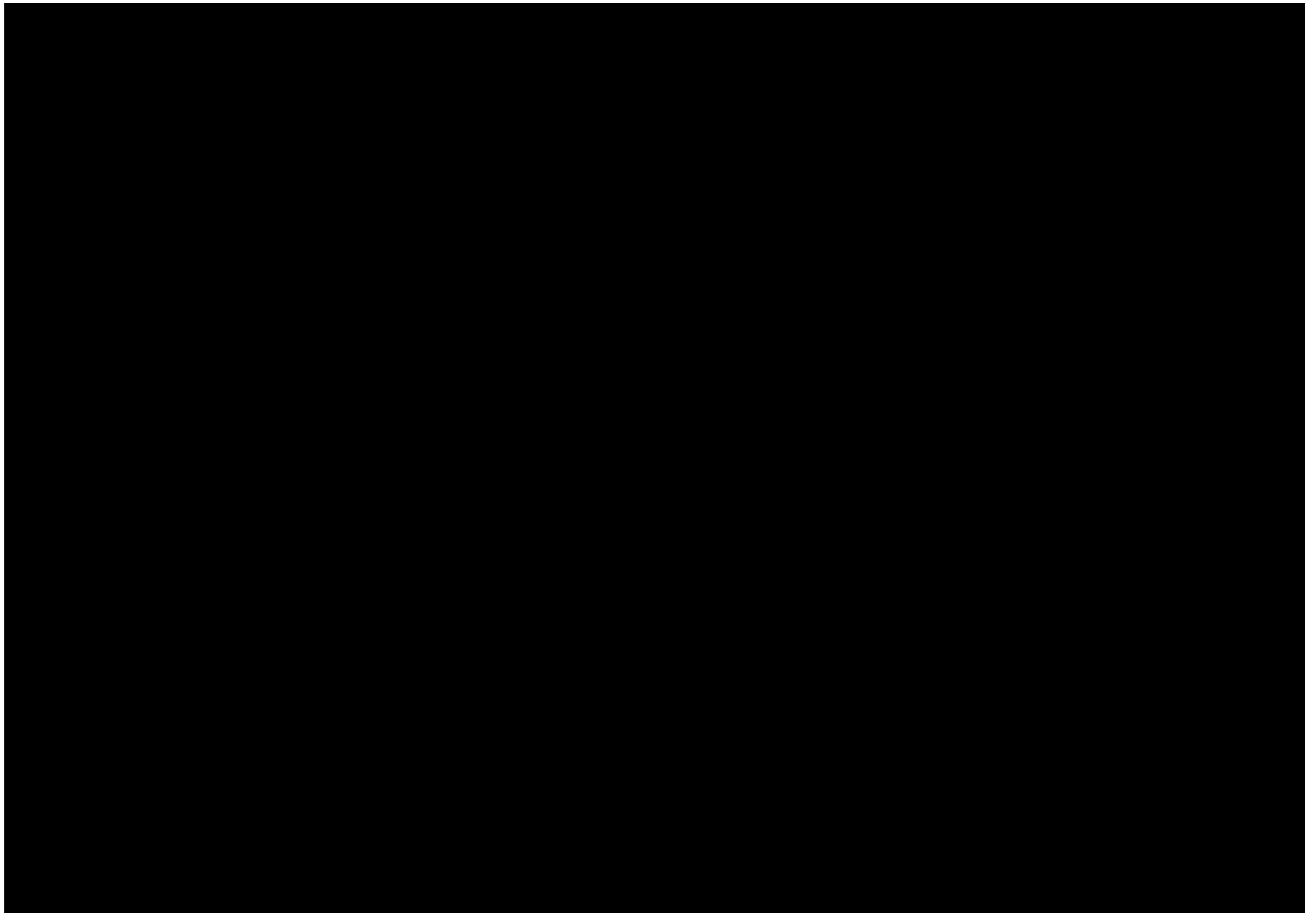


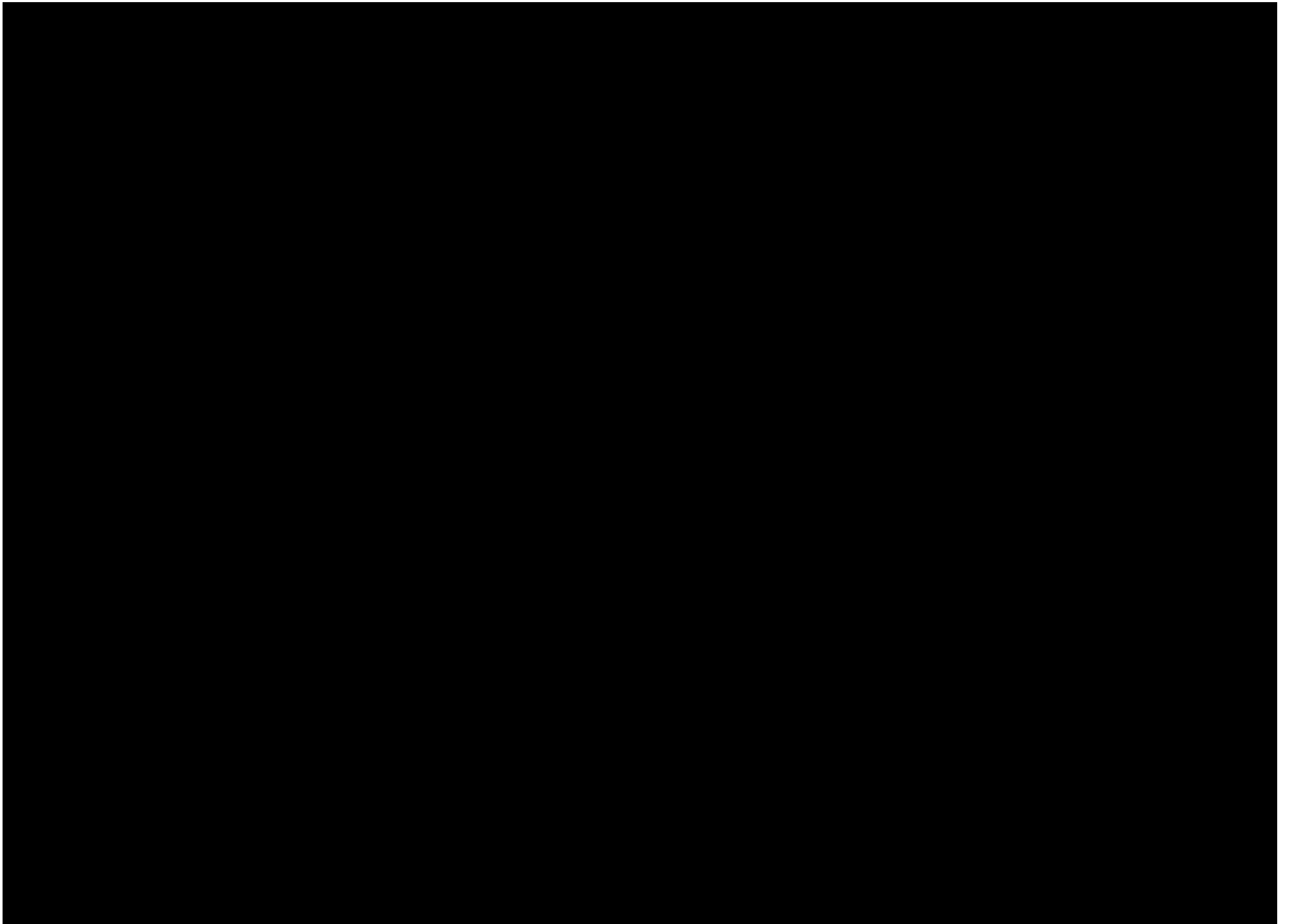




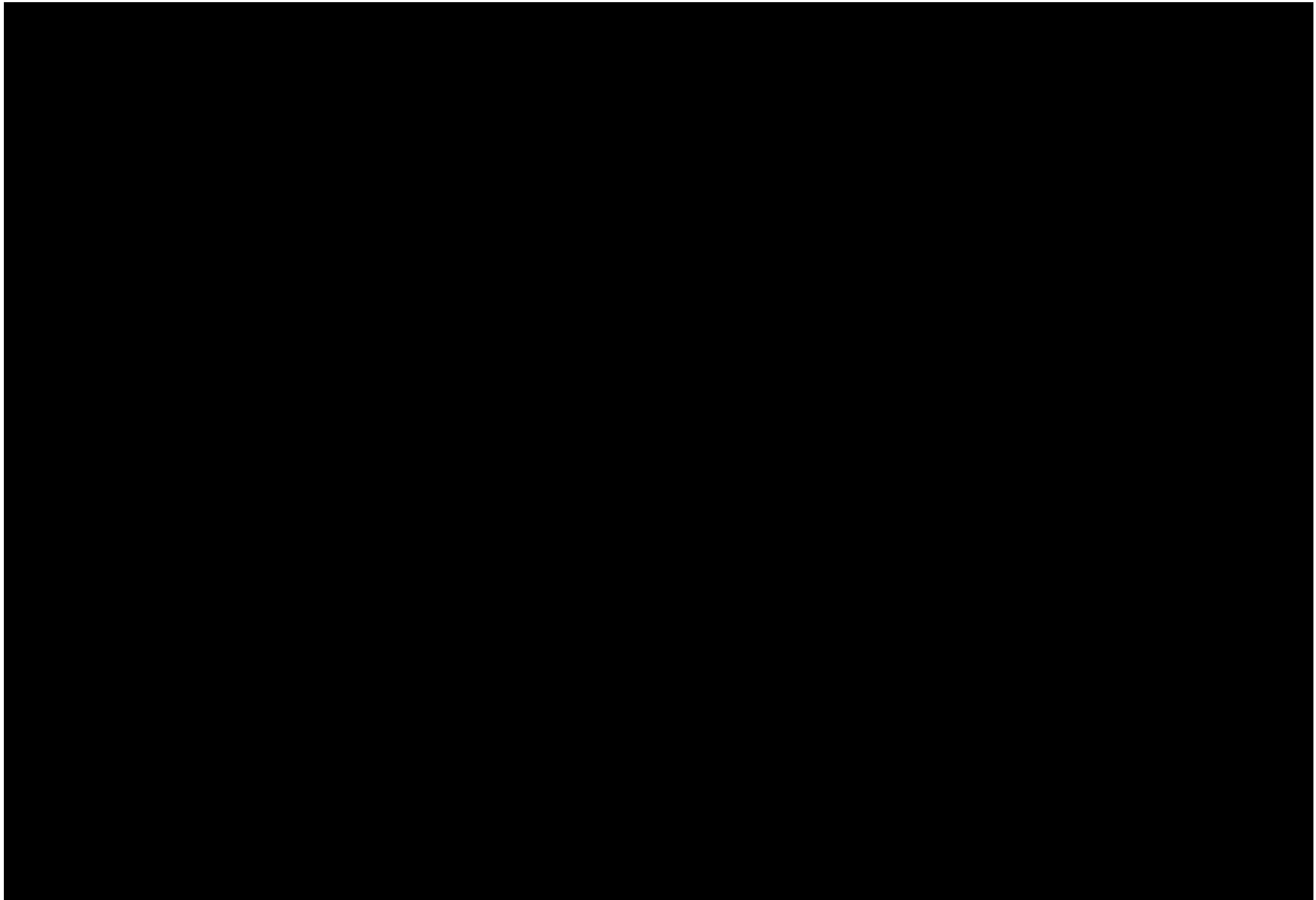


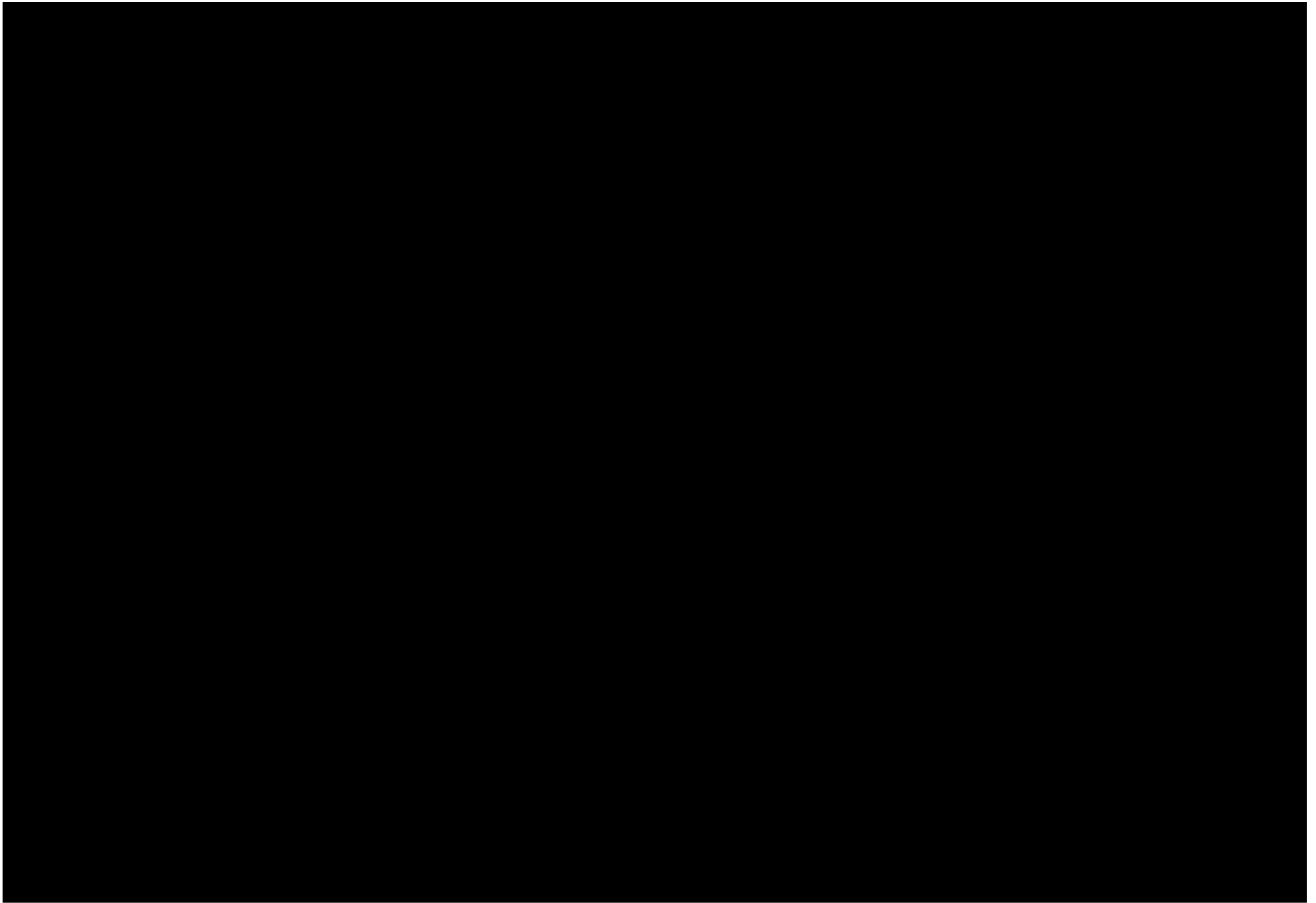








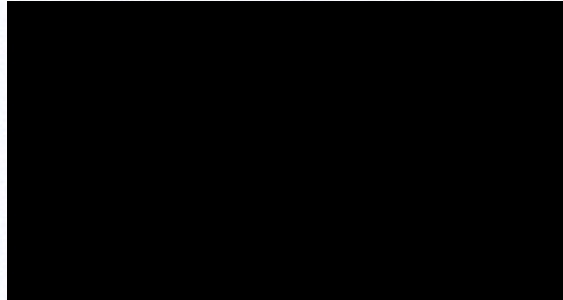
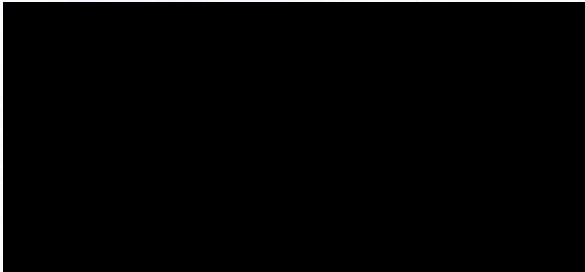




**EXECUTED** as a deed.

Each person who executes this deed on behalf of a party under a power of attorney declares that he or she is not aware of any fact or circumstance that might affect his or her authority to do so under that power of attorney.

**SIGNED, SEALED AND DELIVERED** by  
**SYDNEY METRO** ABN 12 354 063 515,  
by its authorised delegate, in the presence  
of:



**SIGNED, SEALED AND DELIVERED** by  
**MACQUARIE GROUP LIMITED** ABN 94  
122 169 279 as a deed by its duly  
authorised attorneys who hereby state that  
at the time of executing this instrument  
they have no notice of the revocation of the  
Power of Attorney dated 16 January 2020

